

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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EDITORIAL COMMENT

AT first sight the concessions made by the Treasury with regard to increased pay in the Royal Air Force and the fighting Services generally look like a timely recognition of the burdens imposed upon officers, whose pay has never been more than sufficient for their actual wants, by the rise in the cost of living. When it is examined in detail, however, the generosity of the Government is not so apparent. Under the Finance Act, 1915, officers whose total income does not exceed £300 per annum have hitherto paid income tax at the 1914 rate of about 1s. 4d. in the £. Now the Government with one hand increases the rate of pay and takes it away with the other by subjecting officers' incomes

to the current rate of tax. The benefit to the officer is thus much more apparent than real, and the incidence of the increased taxation will, unfortunately, be felt most heavily by the junior ranks and by those who depend entirely upon their pay, having no supplementary means of their own. It is a niggardly, cheese-paring policy, to say the least, and we shall be surprised if it does not, now that the truth about the much-lauded "increase" in pay is realised, lead to a great deal of dissatisfaction.

It raises once more the much-discussed question of whether all pay in the fighting Services ought not to be free of income tax. There is a great deal to be said for the argument that, as taxation is mainly raised for the upkeep of the Services, it is not fair that those within those Services should be called upon to contribute towards their cost, except in so far as relates to income derived from private sources, and which has nothing to do with the officer's service as such. Naturally, the one who, having large private means, elects to serve his country in one of the fighting Services must expect to pay his share out of the income derived from his investments, but it is not too much to ask that the State should keep its hands off his Service pay. To mulct him on that is almost as logical and just as for the proprietor of a business to declare a levy on the salaries and wages of his employees for the upkeep of his premises and business. We doubt not that the whole question will be raised in Parliament by one of the Service members. It should be, since a full discussion of the matter would do no harm at all.

The Airship Officers' Club

As we recorded last week, the Airship Officers' Club has come into vigorous being, and with it another body called the Airship Old Comrades' Association, the scope and intended work of which was fully set forth in the last issue of FLIGHT. On Saturday evening last the enterprise was officially launched at a dinner at the Connaught Rooms, presided over by General Maitland, the President of the Club, at which a large number of distinguished guests and past and present officers of the airship branch of the Service were present.

We regard both the foundation and objects of the

Club and the Association as being altogether admirable. During the war the airship branch was essentially the silent arm of the Air Force. Its work was not done in the limelight which fell upon the various active battle-fronts of the war, but was carried out mainly over the narrow waters where there were few to witness and none to record the always monotonous and generally hazardous anti-submarine patrols which formed the major part of its task. Even now, when the veil of the censorship has been lifted, we know little of what that work was or of how it was accomplished by the officers and men of an arm literally as well as figuratively working in the dark. All we really know is that when war broke out we were possessed of no more than two, or at most three, small airships which were quite incapable of doing effective work, and that the armistice found us, somewhat to the surprise even of those associated with aviation, in possession of a formidable fleet of lighter-than-air craft. It is true to say that this had grown from absolutely nothing. Yet so great had been the effort put into the creation of that fleet that we had left Germany far behind in types which before the war she had monopolised.

To a great extent the end of the war means that the priceless *personnel* which created and manned this great aerial Service will be scattered to the four winds. Our peace establishment will not permit of the retention in the Service of more than a mere nucleus, comparatively speaking, of the whole. It would have been a thousand pities if this fine Service should have been left to drift apart altogether after demobilisation, and if there were no other considerations to take into account we should still welcome the advent of the Airship Officers' Club and its offspring, the Airship Old Comrades' Association. But, as was pointed out by General Maitland at the dinner on Saturday last, there are other functions that can be usefully performed by these organisations. To assist past officers and ratings of the airship service to secure employment, succour those who have fallen by the wayside, to assist the dependants of those who pass from among us, and to generally foster and watch over the interests of "Old Comrades"—these are each and all most worthy objects.

One article of faith in the constitution of the Association we are glad to see. Politics and interference in matters affecting the Service are taboo. That is as it should be, since the introduction of politics spells early ruin to any organisation of the kind, while attempts from outside to interfere with the discipline and conduct of the Service are inevitably doomed to failure, and must in the end result in the breaking up of the body attempting such interference. Moreover, we do not want to see the methods of the trades unions introduced into the fighting Services. The Association is very wise in laying down as an absolute and unalterable rule that it will have nothing to do with the genus agitator or grievance-monger. Taken all round, both the Club and the Association have been launched under the most auspicious circumstances, and we most sincerely wish them well.

The
"Encourage-
ment"
of
Civil
Aviation

In our issue of last week we commented on the advertisement of the London and Provincial Aviation Company, announcing that owing to the peculiar methods of "encouragement" alleged to be employed by the Civil Flying Department of the Air Ministry, it has decided

to go out of business. We observe that the same advertisement, or one almost precisely similar, has appeared in certain of the daily newspapers—the *Daily Mail*, for example. It seems to us that the matter has now gone too far for the authorities to ignore. There is no ambiguity about the statements made by the company. "They are compelled to cease business owing to the operations of the Department of Civil Aviation." That is a definite challenge to the Department, and, through the Department, to the Government. Either it is true or it is not. If it is not, then for the sake of its own good name and reputation it is up to the Department to refute the statement. It must do so, or be content to have the allegation accepted by default. This is no longer a matter that is confined to the knowledge of the comparatively few. So long as the announcement of the company was confined to the pages of journals intimately connected with aviation it was, in a sense, a domestic matter which the Department by ignoring might have lived down in time. We say might, because, for our own part, we did not at all intend that our comments of last week should constitute the last word on the subject, and we have faith enough in the influence of *FLIGHT* to believe that sooner or later we should have secured some pronouncement from the Department. But it is now a public matter. The announcement that the Department is a stumbling-block to the progress of civil aviation, instead of a help, has been read and appreciated by the million, and we do not see how the challenge can be ignored. It can only be answered by a denial of the principal statement that the company has been forced out of business by the operations of the Department. If that is not forthcoming, then we are driven to the assumption, amounting to certainty, that it is a true charge.

In that case the public will certainly want to know why the Department of Civil Aviation is a department of discouragement, and who and what is to blame. Further, it will have to explain the suggestion that some of the discouragement alleged against the Department is the outcome of axe-grinding on the part of some whose book will not be suited by a too-rapid development of civilian aviation schemes before they have had time to mature their own. As a matter of fact, the suggestion has in some quarters become an actual, concrete accusation. One thing is very certain, that there must be an immediate and searching inquiry into the facts of the closing down of the London and Provincial Aviation Company. If the higher authorities of the Air Ministry are not inclined to institute such an enquiry without further pressure, then that pressure must be applied through Parliament. The matter is far too serious to be allowed to rest where it is. It concerns the good faith of one of the principal Departments of State, and goes a good deal deeper than a mere question of policy.

Who
Controls
Airships?

Is the Air Ministry responsible for the control of the whole of the Air Service, or only for that of a part? We ask this question because there really seems to be a doubt about it. We recollect that during the debate on the Address, Mr. Churchill, who, as Air Minister, ought to have known whereof he spoke, said, "The integrity, the unity, the independence of the Royal Air Force will be sedulously guarded." If that meant anything at all, it surely meant that the

Flight—And the Men



Mr. CLAUDE JOHNSON, Managing Director of Rolls-Royce, Ltd.

"Flight" Copyright

Royal Air Force would remain one integral body, united as to its branches and independent of the control of either War Office or Admiralty. There is no other meaning that we can attach to so categorical a statement.

Yet we read that the rigid airships R.33 and R.34 have now been "handed back" to the Admiralty. The question then arises: Is the airship branch of the Service a purely naval force or is it not? Before the fusion of the R.N.A.S. and the R.F.C. the airships were completely and directly under naval administration. As soon as the R.A.F. came into being the officers and men of the airship branch were put into R.A.F. uniform, the whole of the routine at airship stations was changed from naval to quasi-military, and the whole atmosphere completely changed. "Airships" still remained under the Admiralty for "operations," but administratively they became a part of the R.A.F. It was clearly understood that as soon as possible after the armistice the airships would pass completely under the control of the Air Ministry, but that has certainly not happened yet. The correspondence between the Departments is "still proceeding," and in the meantime the airships which were graciously lent by the Admiralty to the Air Ministry for the Atlantic flight and for advertising the Victory Loan have been returned to the former.

There may be excellent reasons for the temporary retention under Admiralty control of these craft, but the position all round is so peculiar that we think it is time a definite statement of policy should be made. According to the First Lord of the Admiralty, everyone is not agreed as to the soundness of the view that there should be a single control in the Air Service. That seems to mean that the Admiralty is in disagreement with the principle, and thereby sets itself above the authority of Parliament, which, by passing the Air Force Act, has said there *shall* be but one control. Our own views on the subject are sufficiently well known, since it was *FLIGHT* which led the campaign in favour of a single and indivisible service, but, assuming that there are two sides to the argument, it is surely necessary that the Government should state plainly whether the views of the Admiralty, which may be sound in theory—we do not admit they are if they tend to

the division of the Air Service—are to be permitted to override the authority of Parliament.

It is perfectly clear that so long as the Admiralty retains its hold on the airship branch the State-owned lighter-than-air craft will not be available for the development of the civil side of flying. The voyage of R. 34 was not made under Admiralty auspices—and would not have been—and the only way the Air Ministry could get it done was by "borrowing" the ship from the Navy. The airship shows considerable promise as a vehicle of aerial transport, and it is certainly not in accord with the requirements of civil aviation that the Admiralty should be permitted to pursue the policy of the dog in the manger.

The Air Convention

The Air Ministry has issued for publication the text of the Convention relating to International Air Navigation, and this will be found printed *in extenso* in last week's issue of *FLIGHT* and part in the current number. The Convention has been agreed to by all the representatives of the Powers taking part in the Peace negotiations on the side of the Allies and the States at present subscribing to the League of Nations, subject to certain reservations. It has not been formally approved by the Supreme Council of the Peace Conference, but it has been agreed that it should be issued for the information of the public of the Allied and Associated States.

There is little in the Convention calling for comment, since the completed Convention differs very little from the suggested text put forward some little time ago as a basis for the international regulation of flying. It recognises that every State has complete and exclusive sovereignty in the air above its territory and its territorial waters. It agrees that every State shall accord in time of peace freedom of passage across its territories without distinction of nationality, subject to the right for military reasons to prevent aircraft from flying over certain defined areas of its territory. Except in the matter of these "General Principles" the Convention consists mainly of technical regulations governing the conduct of aerial traffic, which are quite unexceptionable, and, therefore, call for no specific comment.

MR. CLAUDE JOHNSON

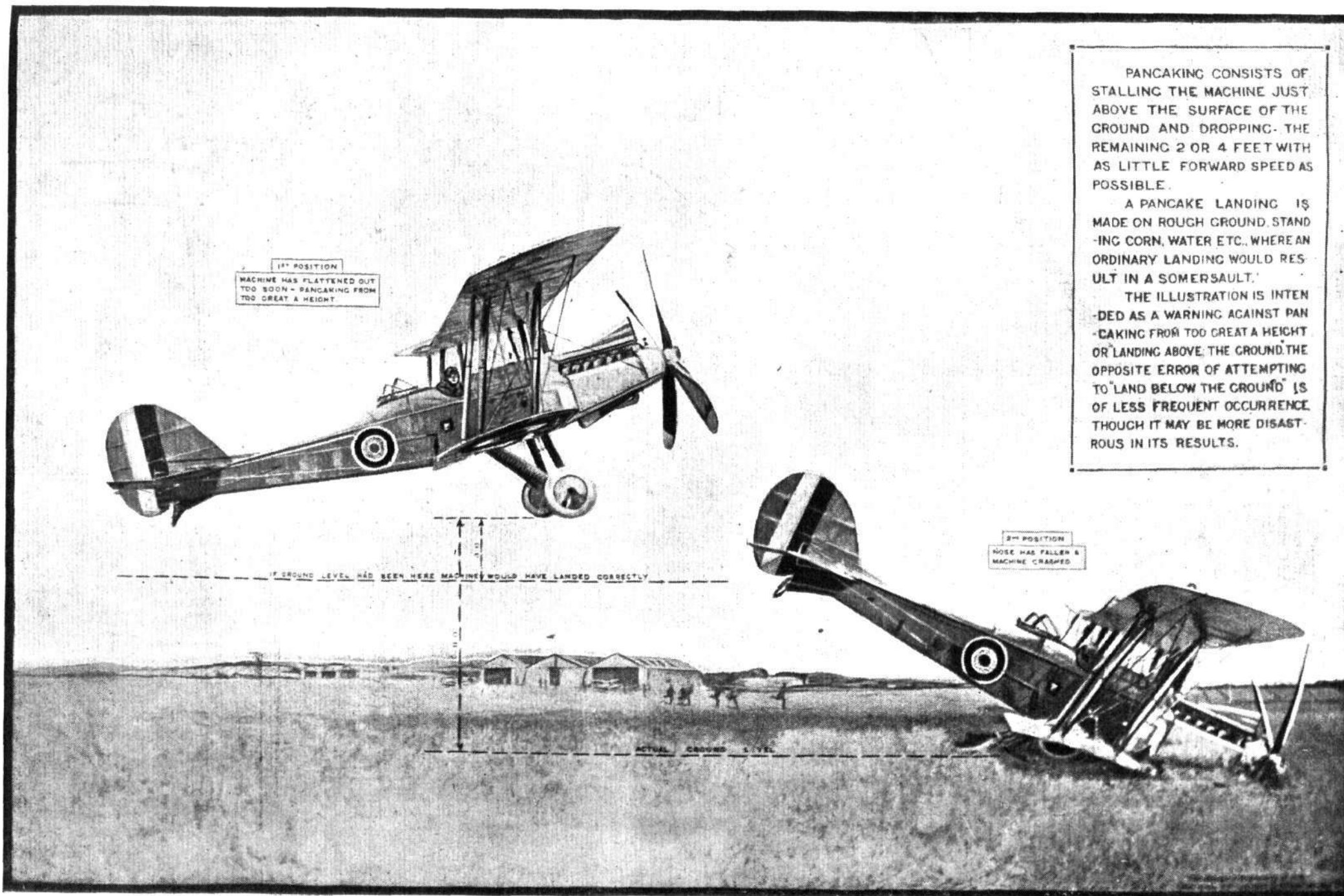
As a rule we have not broken out into biography on the publication of the portraits of prominent personalities in aviation, which have been included in "Flight—And the Men." Nor do we intend to break through the precedents on this occasion, but it is nevertheless fitting that we should refer to what is an unique record in regard to our subject of this week—Mr. Claude Johnson. At the moment when everyone connected with aviation is busy congratulating him and the firm with which he is connected on the successful crossing of the Atlantic by a machine driven by Rolls-Royce engines, it may

not be generally known that Mr. Johnson was the first honorary secretary of the Aero Club of the United Kingdom, as it then was, which was founded in November of 1901. His association with the active side of aeronautics thus began very early, though it did not continue for very long. The War has brought him back into active contact with the movement, and his firm has been, as everyone knows, responsible for the production of a series of very highly successful aero-motors, which have just recently crowned that success by securing the "Blue Ribbon of the Atlantic."

Air Ministry Reorganisation

THE Air Ministry announces that the Secretary of State for Air has approved a reorganisation of the Department of the Secretary to the Air Ministry, one of the objects of which is

to provide more fully for the co-ordination of the work of the Department. In this reorganisation Mr. C. R. Brigstock and Mr. J. A. Webster, D.S.O., who have been transferred from the Board of Trade, have been appointed assistant secretaries



PANCAKING CONSISTS OF STALLING THE MACHINE JUST ABOVE THE SURFACE OF THE GROUND AND DROPPING THE REMAINING 2 OR 4 FEET WITH AS LITTLE FORWARD SPEED AS POSSIBLE.

A PANCAKE LANDING IS MADE ON ROUGH GROUND, STANDING CORN, WATER ETC., WHERE AN ORDINARY LANDING WOULD RESULT IN A SOMERSAULT.

THE ILLUSTRATION IS INTENDED AS A WARNING AGAINST PANCAKING FROM TOO GREAT A HEIGHT OR LANDING ABOVE THE GROUND. THE OPPOSITE ERROR OF ATTEMPTING TO "LAND BELOW THE GROUND" IS OF LESS FREQUENT OCCURRENCE, THOUGH IT MAY BE MORE DISASTROUS IN ITS RESULTS.

Pancaking. (Drawing published by the Air Technical Services for use at the R.A.F. Schools.)

THE GOSPORT FLYING-BOATS

We are able to publish this week drawings and specifications of six different types of flying-boats laid down by the Gosport Aircraft Co., of Gosport and Southampton. This firm has specialised in flying-boats for some time past, and has delivered many to the British Government. The six flying-boats referred to have been designed to meet a variation in requirements for future commercial aviation that appears to cover pretty well all the different purposes to which a flying-boat could be put. They range from a large 10-seater of over 100 ft span to a very small single-seater of only 23 ft. span, as may be seen from the following specifications:—

The Gosport "Fire Fighter" 720 h.p. 10-Seater Flying-Boat

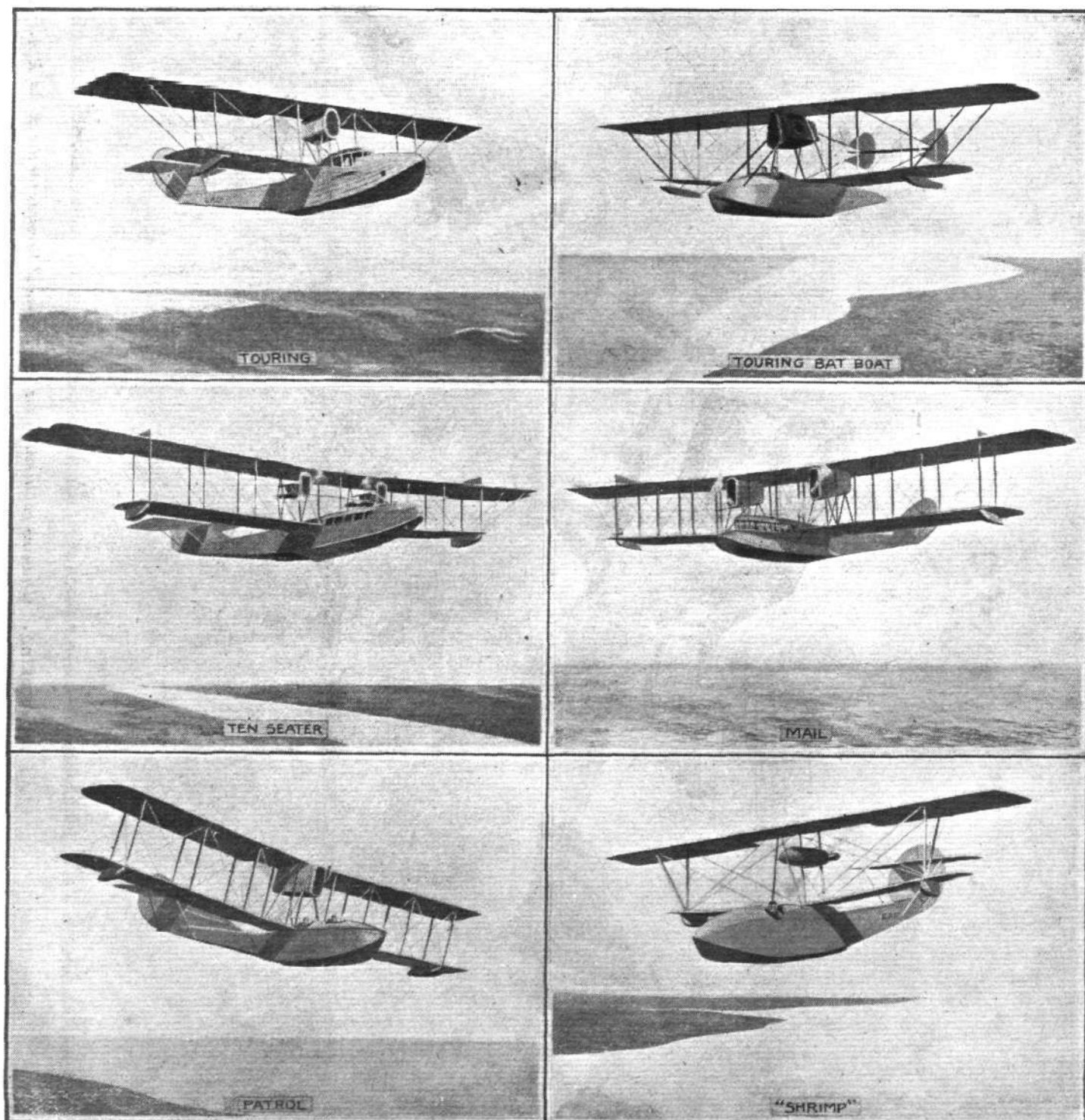
This large boat was designed with a view to carrying men and material in the quickest possible manner to the scene of a forest fire or other emergency, which may arise in such countries as Canada where large lakes and rivers abound, surrounded in many instances by forest or heavily wooded country.

This type, however, can readily be adapted for long-distance passenger or goods traffic, and is designed to withstand continuous rough and heavy service.

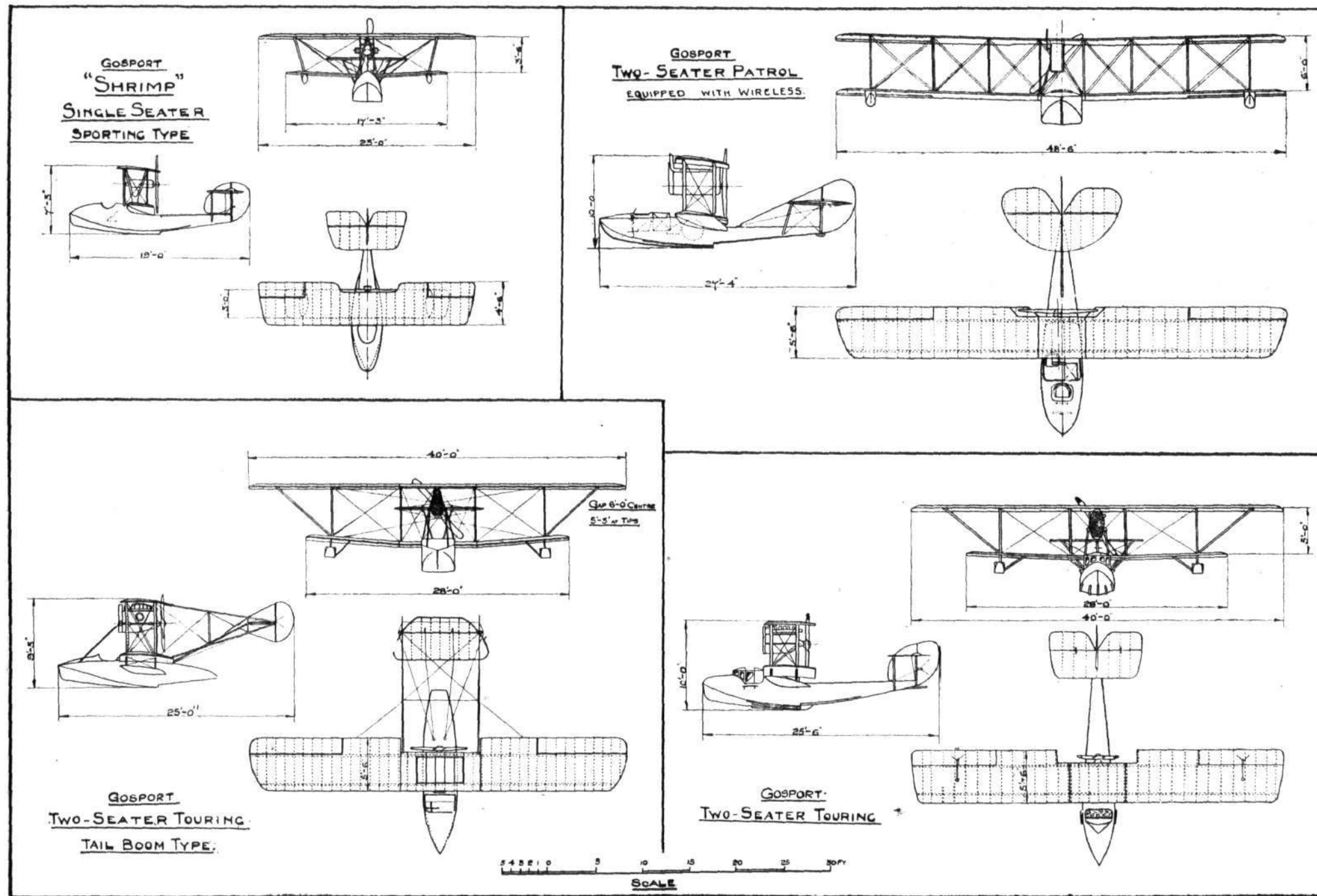
Balanced controls are fitted throughout, enabling the boat to be easily handled and controlled, even in bad weather.

Tanks are provided capable of holding sufficient fuel for a non-stop flight of approximately 400 miles.

Span (top)	103 ft.
" (bottom)	73 ft.
Length	49 ft.
Chord	8 ft.
Gap	9 ft.
Area of main planes	1,380 sq. ft.
Weight fully loaded	12,500 lbs.
Useful load (fuel, crew of 10, gear or supplies, and wireless)	3,600 lbs.
Petrol capacity	190 galls.
Oil capacity	15 galls.
Two 360 h.p. Rolls-Royce (other types fitted if desired)	



THE GOSPORT FLYING-BOAT: Views of the six different types in flight.



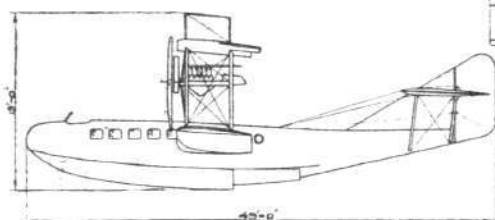
THE GOSPORT FLYING-BOATS : Plans, side and front elevations to scale.

Petrol consumption per hour (full power)	.. ..	46 galls.
Oil consumption per hour (full power)	.. ..	2 galls.
Duration at full power	.. ..	4 hours.
Duration at cruising speed	.. ..	6½ hrs. at 65 m.p.h.
Top speed fully loaded	.. ..	89 m.p.h.
Landing speed fully loaded	.. ..	42 m.p.h.
Ceiling with full load	.. ..	14,000 ft.

Span (top)	.. ..	79 ft.
" (bottom)	.. ..	66 ft.
Length	.. ..	41 ft.
Chord	.. ..	7 ft. 6 ins.
Gap	.. ..	7 ft. 6 ins.
Area of main planes	.. ..	1,000 sq. ft.
Weight fully loaded	.. ..	6,400 lbs.
Useful load (fuel, mail, and six passengers)	.. ..	2,000 lbs.
Petrol capacity	.. ..	92 galls.
Oil capacity	.. ..	15 galls.
Crew	.. ..	Pilot and mechanic.
Two 280 h.p. Rolls-Royce (other types fitted if desired)		
Petrol consumption per hour (full power)	.. ..	37 galls.
Oil consumption per hour (full power)	.. ..	1½ galls.
Duration at full power	.. ..	2½ hours.
Duration at cruising speed	.. ..	5 hrs. at 70 m.p.h.
Top speed fully loaded	.. ..	100 m.p.h.
Landing speed fully loaded	.. ..	45 m.p.h.
Ceiling with full load	.. ..	15,000 ft.

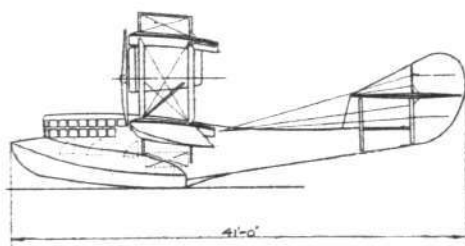
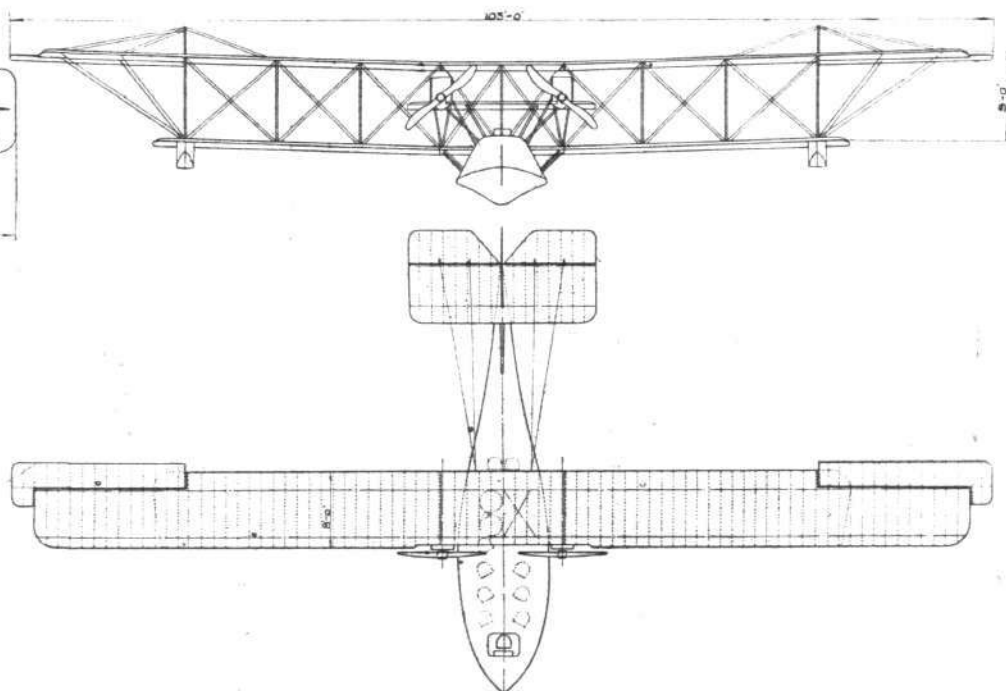
The Gosport "Mail" Boat Six-Passenger Boat

This type has been evolved with the main object of fulfilling the exacting requirements of a long-distance, passenger, mail, and goods-carrying boat. Special attention has been directed towards the comfort and safety of the pilot and passengers. The seating accommodation is particularly spacious and comfortable. The handling of the boat is rendered easy even at low speeds by the ample area of the control surfaces. The wings of this machine are made to fold back.



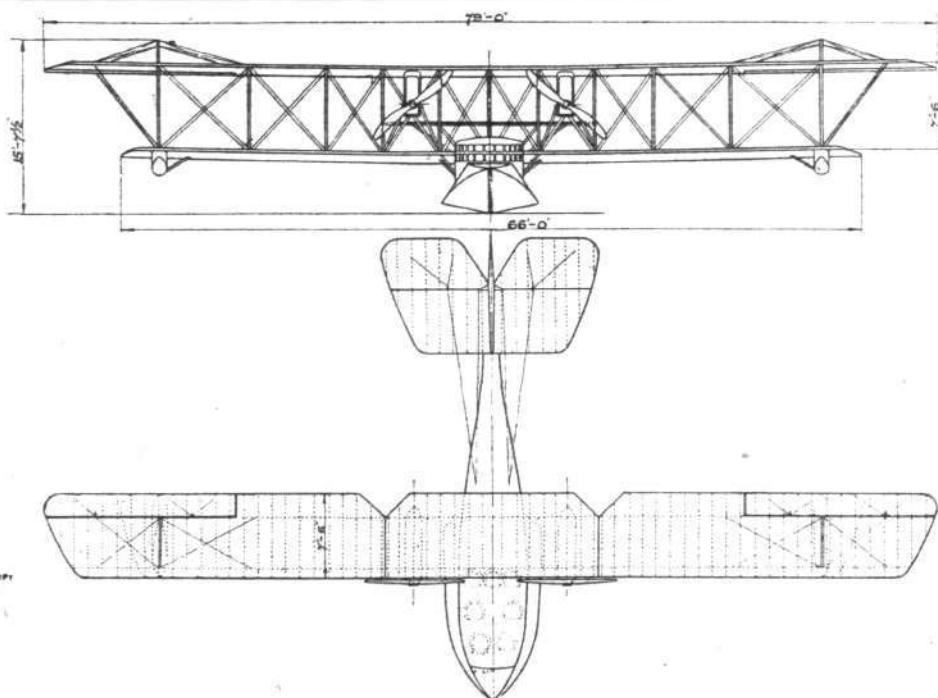
GOSPORT
TWIN ENGINE 10 SEATER BOAT

SCALE



GOSPORT
TWIN ENGINE MAIL BOAT
FOR FAST POSTAL & PASSENGER SERVICE

SCALE



"Gosport" Patrol Boat**200 h.p. Two-Seater, with Wireless Outfit**

This boat has been designed to fulfil the requirements of the Colonies for a fast patrol or police boat, and will be found to possess the qualities of a first-class Service scout. It is equipped with a wireless transmitting and receiving set.

The pilot and wireless operator have an uninterrupted view. Fuel tankage is provided for a six hours' patrol at cruising speed, and from a stationary start this type will climb 100 ft. in about 350 yards.

Span	48 ft. 6 ins.
Length	27 ft. 4 ins.
Chord	5 ft. 6 ins.
Gap	6 ft.
Area of main planes	520 sq. ft.
Weight fully loaded	2,820 lbs.
Useful load	880 lbs.
Petrol capacity	50 galls.
Oil capacity	6 galls.
280 h.p. Rolls-Royce (other types fitted if desired).	
Petrol consumption per hour (full power)	18½ galls.
Oil consumption per hour (full power)	¾ gall.
Duration at full power	2½ hours.
Duration at cruising speed	6¼ hrs. at 60 m.p.h.
Top speed fully loaded	91 m.p.h.
Landing speed fully loaded	42 m.p.h.
Ceiling with full load	22,000 ft.

The Gosport Two-Seater Touring Boat (Tail Boom Type)

This boat has been designed upon lines that have found favour in America. It will appeal to the sportsman pilot who prefers the "Tail Boom" or "Bat-Boat" type of aeroplane. The hull is arranged for pilot and passengers seated side by side, and dual control may be fitted, if required, for instruction. The climb is well over 500 ft. a minute and the machine is capable of attaining a height of about 14,000 ft.

Span (top)	40 ft.
.. (bottom)	28 ft.
Length	25 ft.
Chord	5 ft. 6 ins.
Gap	5 ft. 3 ins. to 6 ft.
Area of main planes	340 sq. ft.
Weight fully loaded	2,000 lbs.
Useful load (pilot, passenger, fuel, and luggage)	650 lbs.
Petrol capacity	33 galls.
Oil capacity	3 galls.
160 h.p. Beardmore. (other types fitted if desired)	
Petrol consumption per hour (full power)	13 galls.
Oil consumption per hour (full power)	5½ pints.
Duration at full power	2½ hours.
Duration at cruising speed	3½ hrs. at 60 m.p.h.
Top speed fully loaded	75 m.p.h.
Landing speed fully loaded	35 m.p.h.
Ceiling with full load	14,000 ft.

The Gosport "Popular" Type 160 h.p. Two-Seater Touring Boat

This boat, which is capable of a non-stop journey of 240 miles, has been designed with special regard to the comfort

The Airship Officers Club.

Success in every way attended the first dinner of the Airship Officers Club, at the Connaught Rooms last Saturday night, when a very representative number of Officers joined hands, many after a long spell of absence. As one described it, it was a very cheery show, and in spite of the ruling of the Chairman, Brig.-Gen. Maitland, that there were to be no speeches, almost everyone took a turn at saying things.

Particularly amusing was Col. Hensley, who represented the U.S. on R. 34's return journey. Altogether the function was a delightful send off for the Club, and its associate body the Airship Old Comrades Association.

Amongst the Officers present besides the Chairman, were:—Maj.-Gen. Seely, Maj.-Gen. Sykes, Maj.-Gen. Swinton, Brig.-Gen. Groves, Brig.-Gen. Masterman, Commodore Murray Sueter, Capt. Bosanquet, R.N., Col. Hensley, U.S.N., Col. Mackworth, Lt.-Col. Dunville, Lt.-Col. Fletcher, Lt.-Col. Cunningham, Lt.-Colonel F. L. M. Boothby, Commander Sable, Italian Navy, Maj. Scott and other officers of R 34.

Airship Disaster at Chicago

WHILE a small dirigible was being tested over Chicago on July 21 the envelope caught fire and the wreck fell from a

height of 500 ft., crashing through the glass roof of a bank. Of the five occupants of the airship two landed safely by parachute, and the others were killed through their parachutes catching fire. The petrol tanks burst, causing a great fire in the bank, and in the panic which ensued eight clerks were burnt to death and 27 severely injured.

The motor is strongly mounted on steel struts, and is enclosed in a sheet metal cowl specially designed to give easy access to the carburettors, magnetos, and overhead gear. The planes can be made to fold, thus enabling the boat to be housed in a small shed. This boat, fitted with dual control, can be adapted for "School" purposes.

Span (top)	40 ft.
.. (bottom)	28 ft.
Length	25 ft. 6 ins.
Chord	5 ft. 6 ins.
Gap	5 ft.
Area of main planes	340 sq. ft.
Weight fully loaded	2,000 lbs.
Useful load	650 lbs.
Petrol capacity	33 galls.
Oil capacity	3 galls.
160 h.p. Beardmore (other types fitted if desired).	
Petrol consumption per hour (full power)	13 galls.
Oil consumption per hour (full power)	5½ pints.
Duration at full power	2½ hours.
Duration at cruising speed	3½ hrs. at 65 m.p.h.
Top speed fully loaded	80 m.p.h.
Landing speed fully loaded	35 m.p.h.
Ceiling with full load	14,000 ft.

The Gosport "Shrimp" 50 h.p. Single-Seater

This diminutive boat will appeal to either the sportsman or business man who wishes to act as his own pilot. It is an ideal boat for the man residing on an island or up river, and it has the combined advantages of low initial cost and economical flying expenses. The engine is an air-cooled two-cylinder horizontally-opposed unit of 50 h.p., and only requires little more attention than any high-powered motor-cycle or light car unit. The boat has a low landing speed, is stable, and most simple to fly, which factors are naturally most important for confined river or lake work. The trueing up of the boat generally is a very easy operation owing to the simple design.

Span (top)	23 ft.
.. (bottom)	17 ft. 3 ins.
Length	19 ft.
Chord (top)	4 ft. 6 ins.
.. (bottom)	3 ft.
Gap	3 ft. 6 ins.
Weight fully loaded	750 lbs.
Area of main planes	140 sq. ft.
Useful load (pilot, fuel and luggage)	270 lbs.
Petrol capacity	10 galls.
Oil capacity	2 galls.
45-50 h.p. A.B.C.	
Petrol consumption per hour (full power)	3 galls.
Oil consumption per hour (full power)	¾ gall.
Duration at full power	3½ hours.
Duration at cruising speed	5 hrs. at 55 m.p.h.
Top speed fully loaded	65 m.p.h.
Landing speed fully loaded	35 m.p.h.
Ceiling with full load	10,000 ft.

According to one account, the envelope of the airship, which was 162 ft. in length, buckled and broke in half.

No Dirigibles Over Cities in U.S.?

PROMPTED by the recent airship disaster at Chicago, a Bill has been introduced into the American House of representatives prescribing definite aerial lines and prohibiting dirigibles containing inflammable gases from flying over cities.

French Looking to the Argentine

THE first party of a French Air Mission to the Argentine has left France. It is headed by Commandant Precardin, and its object is to open up a French aeronautical industry in Argentina by giving exhibitions with French machines.

The mission is taking a large number of machines, including two Farman F. 41 for tuition purposes, several Farman F. 50's, Breguets and Spads and Teller and Lambert seaplanes. Some of the F. 50's and Breguet machines are limousines.

THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS

FLYING SERVICES FUND COMMITTEE

A MEETING of the Flying Services Fund Committee was held on Monday, July 28, 1919, when there were present:—Lieut.-Col. T. O'B. Hubbard, M.C., R.A.F., in the Chair, Mr. Chester Fox and Mr. Harold E. Perrin, Secretary.

Grants and Allowances.—The following Grants and Allowances were made:—

(110) A Grant of £10 to an Ex-2nd Class Air-Mechanic in the Royal Flying Corps who had been incapacitated on active service.

(127) An allowance of £4 a month for six months to the mother of a Petty Officer in the Royal Naval Air Service who had been killed on active service.

(224) An allowance of £2 a month for six months to the mother of a 2nd Lieutenant in the Royal Air Force who had been killed on active service.

(225) A Grant of £8 and an allowance of £2 a month for six months to the widow of a Sergeant-Major in the Royal Air Force who had died on active service.

(234) An allowance of £1 a month for twelve months to the widow of a Sergeant in the Royal Air Force who had died on active service.

(235) An allowance of £2 a month for six months to the widow of a Leading Aircraftman in the Royal Air Force who had died on active service.

(236) An allowance of £4 a month for six months to the widow of a 1st Class Air-Mechanic in the Royal Air Force who had died on active service.

(237) An allowance of £2 a month for six months to the widow of a Flight-Sergeant in the Royal Air Force who had died on active service.

(238) An allowance of £1 a month for six months to the mother of a Private in the Royal Air Force who had died on active service.

(239) An allowance of £2 a month for six months to the widow of a Corporal in the Royal Air Force who had died on active service.

Col. R. H. More, C.M.G.—Letter was read from Col. R. H. More, C.M.G., dated July 25, 1919, resigning from the Committee. His resignation was received with much regret, and the Secretary was instructed to write and thank him for his services on the Committee.

Royal Garden Party

The Members of the Flying Services Fund Committee were honoured with invitations to Their Majesties Afternoon Party at Buckingham Palace on Friday, July 25, 1919, and the following were present:—Col. R. H. More, C.M.G., Lieut.-Col. T. O'B. Hubbard, M.C., R.A.F., Mr. Chester Fox, Mr. H. E. Perrin and Mr. B. Stevenson.

Jacques Schneider International Race

The race for the Jacques Schneider International Trophy will be held on Wednesday, September 10, 1919, at Bournemouth. The course will be over a circuit of about 30 miles, starting from Bournemouth, and taking in Swanage and Christchurch.

Messrs. S. E. Saunders, Ltd., the well-known yacht and aircraft builders, of Cowes, Isle of Wight, have kindly placed their new erecting shops and slipways at the disposal of the Club for the accommodation of the competing machines.

Machines representing the British Empire must be ready not later than September 1, 1919.

The Committee of the Royal Aero Club will select the three competitors to represent the British Empire, and reserves to itself the right to hold eliminating trials.

Entries are to be made to the Royal Aero Club, 3, Clifford Street, London, W. 1, not later than July 31, 1919. Each entry must be accompanied by the entry fee of £20.

Presentations to the Club

The following books have been presented by the publishers to the Club Library:—

"The Year Book of Wireless Telegraphy and Telephony, 1919." (Published by the Wireless Press, Ltd.)

"Practical Aviation," including Construction and Operation, by J. Andrew White. (Published by the Wireless Press, Ltd.)

"Les Moteurs a Explosion dans l'Aviation," by A. Masmejean and E. Bérèhère. (Published by H. Dunod et E. Pinat.)

"Résumé des Connaissances Scientifiques utiles aux Aviateurs et Mécaniciens de l'Aéronautique," by Ed. Marcotte and E. Bérèhère. (Published by H. Dunod et E. Pinat.)

"The Wonder Book of Aircraft." Edited by Harry Golding. (Published by Ward, Lock and Co., Ltd.)

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916)

Administered by the Royal Aero Club

For the benefit of Officers, Non-Commissioned Officers and Men of the ROYAL AIR FORCE who are incapacitated while on duty, and for the widows and dependants of those who are killed or die from injuries or illness contracted while on duty.

Honorary Treasurer:

The Right Hon. LORD KINNAIRD.

Committee:

H.R.H. PRINCE ALBERT, K.G. (Chairman).

Mr. CHESTER FOX.

Lieut.-Col. T. O'B. HUBBARD, M.C., R.A.F.

Lieut.-Col. C. E. MAUDE, R.A.F.

Secretary:

H. E. PERRIN.

Bankers:

MESSRS. BARCLAYS BANK, LTD., 4, Pall Mall East, London, S.W. 1.

Subscriptions:

	£	s.	d.
Total subscriptions received to July 5, 1919 ..	15,066	4	9
Collected at Church of England Parade Services at Headquarters, South-Western Area, Royal Air Force, Salisbury	6	11	4
Lieut. H. A. Turrill, R.A.S.C.	2	2	0
Proceeds of Exhibition of Models by Stanley Bell	3	1	0

Total, July 29, 1919 15,077 19 1

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

ROYAL AERO CLUB AND R 34

ALTHOUGH official Service recognition could not publicly be vouchsafed to the officers and crew of R 34 for their epoch-making journey across the Atlantic and back, the Royal Aero Club were happily able, at Princes' Restaurant, on Wednesday of last week, to entertain Brig.-Gen. E. M. Maitland, C.M.G., D.S.O., Maj. G. H. Scott, and the crew of the airship. The Duke of Atholl, the Chairman of the Club, presided, and amongst the notable guests present at this very big gathering were the American Ambassador, Maj.-Gen. Seely, Maj.-Gen. Sir Hugh Trenchard, Maj. J. E. M. Pritchard (R 34), Maj. G. G. H. Cook (R 34), Mr. H. White Smith (Chairman of the Society of British Aircraft), Lord Hugh Cecil, M.P., Capt. G. S. Greenland (R 34), Brig.-Gen. J. M. Steel, Capt. G. Harris (R 34), Brig.-Gen. E. A. D. Masterman, Mr. A. Mortimer Singer, Lieut. H. F. Luck (R 34), Sir Campbell Stuart, Lieut.-Col. Alec Ogilvie, Lieut. R. D. Durrant (R 34), Lieut. J. D. Shotter (R 34), Lieut.-Col. F. L. M. Boothby, Mr. F. Handley Page, Lieut.-Col. W. M. Hensley (U.S. Army), Lieut.-Col. F. K. McClean, Mr. R. D. Blumenfeld, Comdr. Fable, Mr.

G. Holt Thomas, Lieut.-Col. C. de W. Crookshank, Brig.-Gen. Huggins, Gen. Brancker, Gen. Festing, Mr. Patrick Y. Alexander, Lieut.-Comdr. H. E. Perrin, Gen. Ellington, Count Torby, Lieut.-Col. Bristow, Lieut.-Col. Hubbard, Comdr. Ramsey, Lieut.-Col. Delacombe.

Prince Albert sent a letter in which he stated that nothing but a public engagement would have prevented him being present. He congratulated Brig.-Gen. Maitland and the crew on their splendid performance.

Sir Rosslyn Wemyss wrote saying that an engagement had taken him out of London. He also congratulated Brig.-Gen. Maitland and the crew of R 34 on their achievements.

Mr. Churchill (Secretary of State for War) and Mr. Walter Long (First Lord of the Admiralty) sent letters regretting inability to be present.

Proposing "The King," the Chairman said he was sure that no one was more proud of the performance of R 34 than the head of the British community.

The Duke of Atholl then proposed "Brig.-Gen. Maitland,

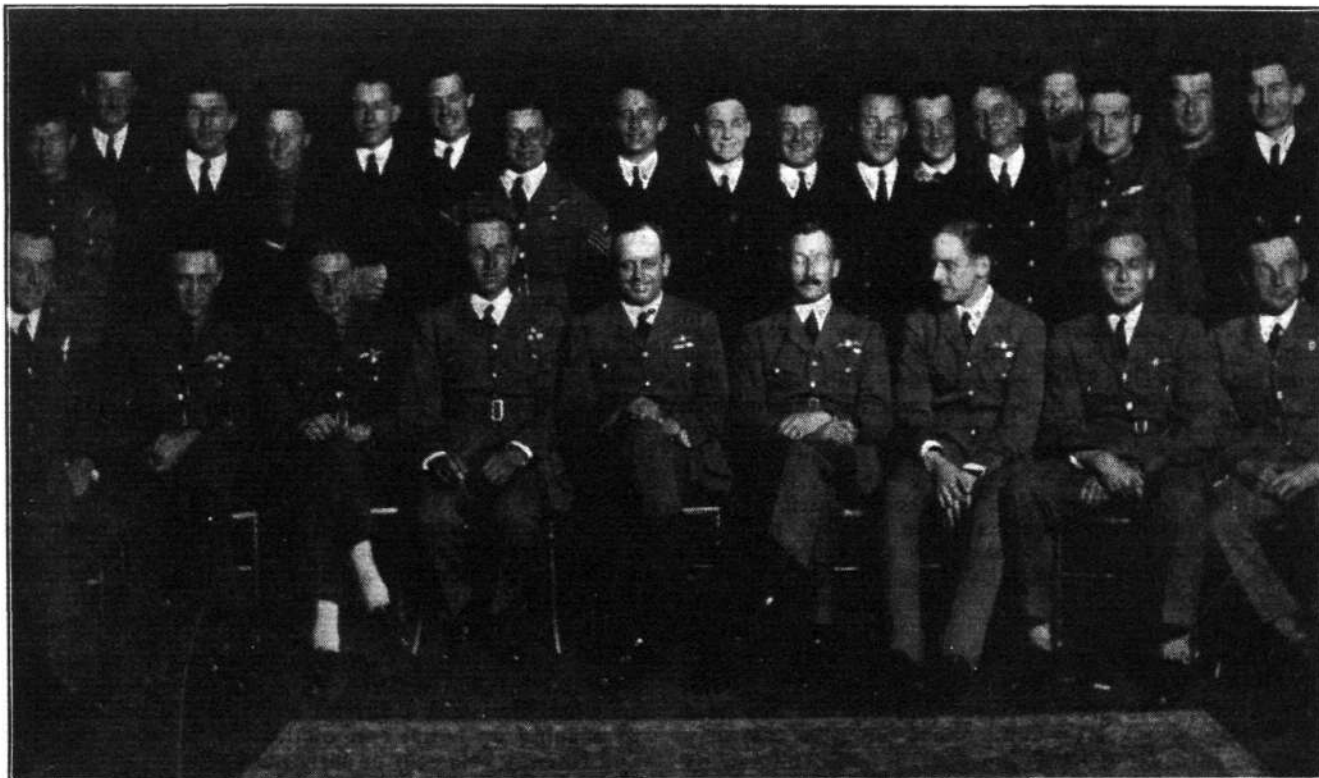
Maj. Scott and the Crew of R 34." Thanks to the Air Ministry, the Chairman said, there was no stagnation in the flying world, such as was thought would be the case before the War. That Ministry had been of great use ever since it came into existence. It had done extraordinarily well, and it was far from being unpopular. Obviously no private concern could have developed flying in the way it had been developed by a Government department. The Club being the head of Aerial Sport, no better body could be found to organise a banquet of welcome to those who had carried out the adventure of R 34, as if there was anything more sporting than this feat he was not aware of it. Through the wireless communication they knew every movement of the airship, and the public excitement was kept at a tremendous pitch. "Your joys were our joys," continued the Chairman; "your sorrows were our sorrows, and when things were thought to be going wrong you had the prayers and the sympathy of both sides of the Atlantic." We always hoped for the best, and we were most grateful to the American cruisers that went out to help the airship. The achievement of R 34 would ever stand out in history as one of the greatest feats of skill, daring, and endurance that had ever been performed. The War had given the Air Force its chance, and made it what it was. When Zeppelins visited this country and our airmen saw women and children being massacred, they put their shoulders to the wheel, and showed that by working together in a spirit of comradeship there was nothing this nation could not do if it tried. They ought to be able to prevent war in the future. Had Lord Kitchener a few aeroplanes at Khartoum or Omdurman we should not have had to trudge many weary miles over sands, but we would have settled the whole of the trouble in two or three hours. They had to thank R 34 for bringing America closer to us. If anything was going to keep up the spirit of friendship and brotherhood between England and America, and make them remember the lessons of the trenches, he was certain it was the voyage of R 34. On behalf of the Royal Aero Club he congratulated the officers and the crew on their splendid feat, also the designers and builders of the ship, from the drawing office to the workshop.

In supporting the toast, the American Ambassador said he felt that he was addressing the most distinguished company that had ever visited the United States. Their place in history was secure and fixed as only a place could be fixed for those who, for the first time, did something great in the history of mankind. They had crossed the Atlantic, and doubled their tracks and returned to the country from which they

came. In all the rolling years that could never be done for the first time again. Language failed him, as it would fail anybody, adequately to express the admiration they felt at the gallantry of the men who undertook the feat; nor did he believe that any could appreciate the new era in science that was now opened in front of them. For centuries men had waited to fly across the sea, yet now the Atlantic had been crossed three times in three months, and recrossed for the first time. He had read in a recent article a quotation written by Horace Walpole, who said:—"Three more balloons have gone up in the last week, and now at last we have an aerial navy, so what matters the loss of the command to America of the sea?" Just why the writer thought the British were losing command of the sea he did not know, but if they lost it they promptly recovered it. That was written 150 years ago, when a great feat was performed and three air balloons had ascended; but a century and a half passed before aerial traffic came into general use. The Atlantic had been crossed, but the Pacific remained. He confidently expected that somebody would one day leave London and never alight again until he had flown round the earth. If the engine were fast enough and the speed great enough a man would leave London on a Wednesday and get home on Tuesday in the same week. That might be the secret of perpetual youth.

He could not but think of the Zeppelin and contrast the use the Germans made of it, and the use Britain had made of it. The Germans used it to carry disease, destruction, and death among a peaceful population of non-combatants; a message of destruction to quiet, slumbering homes. Great Britain had used it to send across the sea a message of amity and goodwill and friendship among the nations. That message went home to the hearts of the American people, and he spoke advisedly in their name when he said in all earnestness that it did mark the drawing together of these people and mark the diminution of the space that divided them. It also symbolised the wonderful approach of their thoughts and sentiments that the four years of conflict had brought. It must unite people so close in heart and sentiment, and that union would afford to the world the best hope and prospect of enduring peace and happiness. The one complaint he made about the achievement was that they did not tarry longer, but when the experiment was repeated he promised them at all times a cordial and friendly reception.

Maj.-Gen. Seely, also supporting the toast, said that the voyage across the Atlantic and back was a glorious achieve-



"Flight" Copyright

R 34 OFFICERS AND CREW AT THE ROYAL AERO CLUB BANQUET: Brig.-Gen. Maitland and Maj. G. H. Scott are in the centre, supported by Maj. Pritchard, Maj. Cook, Capt. Greenland, Capt. Harris, Lieut. Shotter, Lieut. Luck, and Lieut. Durrant.

ment. Many had asked, Was the voyage of R 34 worth while? From a scientific standpoint the voyage, he claimed, was worth while a hundred times over. They had learned a most valuable lesson, especially from a meteorological point of view. Such a voyage would often be done again. The peculiarity about an airship was that the bigger it got the simpler the voyage became. It was true we were on the threshold of a new era. They knew they could get into the north-east trades wind in going from the Eastern to the Western hemispheres, and that they could go up to 8,000 ft. or 10,000 ft. and find a favourable south-westerly wind to bring them back again.

The other day, in the course of his duty, he flew to Ireland and called upon Messrs. Harland and Wolff, the well-known shipbuilders, who showed him a model of a ship which they built at the beginning of the War, and inset on the same board was a model of a vessel on almost identical lines that they had built fifty years ago which was just one-fiftieth the size. That advance in the navigation of the sea might also be the advance that would be made in the navigation of the air in the fifty years that lay before us. They had learnt that the stout hearts and the good comradeship of the men of our race were as good as ever they had been. When he asked one of the officers of R 34 what he should say on that occasion, he replied, "Crack up the crew. They are the finest fellows I have ever seen either on the sea or in the air." On behalf of the Government he congratulated the officers and crew on their splendid achievement. They were proud of what these men had done. They rejoiced that the crew had been able to bring us closer still to America, and, above all, they were proud to meet them safe and sound after an arduous and most successful voyage.

Sir Hugh Trenchard, who also spoke to the toast, said the aviators had helped to keep the reputation of British airmen first among those of the world. There must have been the most cordial co-operation and confidence between all ranks to enable them to accomplish what they did. With such effort that reputation would remain first, both in the fighting service and, he sincerely hoped, in the paths of peace. This voyage was the keystone of the arch on which the future development of aircraft for peaceful work depended. The officers and crew of R 34 had worthily upheld and added to the best traditions of this country, and set an example and created a tradition for the new Royal Air Force.

Mr. H. White Smith, Chairman of the Society of British Aircraft Constructors, in congratulating the guests, said the Atlantic trip of the R 34 would contribute greatly to the development of the future airship. He pictured how the future generation would look back 100 years hence and wonder at our present crude productions. We were not yet at the height of construction, because the R 34 was similar in character to the Zeppelin which was shot down in 1916, and very much of the same type as the German airships at the present time. There was great room and need for the development not only of aircraft but also of the engines. We must strive to keep ahead. The R 34 had been to America, and he could not but believe that the Americans, having seen her, would not be satisfied till they had produced something better. All these voyages of aeroplanes and airship across the seas filled a place in the scheme of development of aviation.

Brig.-Gen. Maitland, in reply, said their flight was carried out under service conditions. He was merely a passenger in the ship. The entire responsibility for the executive work rested on Maj. Scott and his gallant crew. Maj. Scott displayed very great skill in airmanship, and nothing worried him. The Air Ministry had three objectives in sending them on the voyage. First, they were to collect scientific data of use for commercial purposes in the air, to get information about the uncharted air over the Atlantic and the ever-changing weather conditions. The second objective was to demonstrate a rigid airship for future commercial possibilities, and the third objective was to pay a visit to

Newfoundland, Canada, and the United States. They had learned a great deal about electrical storms and the way they affected airships. Although they knew very little about them they were not afraid of them, but the Research Department of the Air Ministry were now going to concentrate on those problems and try and find out all about them. In rough weather the ship behaved extraordinarily well, and there was no feeling of anxiety as to what would happen to her, thanks to the excellent work of the design staff of the Admiralty, and the makers of the engines. An airship liked travelling in fog unlike heavier-than-air machines, because it made the journey easier.

As to meteorology, they certainly learnt a great deal of that, and it was the most important study of the immediate future. Curiously enough, they saw very little of the Atlantic. Before they started they expected to see very little else, but the sea was blotted out by the fog or low-lying clouds. By wireless they were in touch with East Fortune for a distance of 1,100 miles, and they were always in touch either with England, the Azores, or the New World. They heard—quite unofficially—the result of the Willard-Dempsey fight in the Atlantic, and were glad to hear it, while from the Marconi chart they knew exactly where the big liners were, though they could not see them. They only saw a few trawlers off the coast of Ireland, a sailing vessel near America, two large unfriendly icebergs, and a fascinating icefield. In flying over Nova Scotia at a height of 800 ft. they could easily detect the types of the trees and appreciate the quality of the soil, and that suggested to him that the airship might prove to be of considerable use in connection with forestry and surveying work. They also discovered a complete cure for sea-sickness, for the motion was very slow and deliberate, and in the nature of a slight pitch. He predicted that that would prove of importance in future, and would cause people to select the airship in preference to the surface ship for overseas voyages. He had a letter from Mr. Rudyard Kipling, in one of whose stories a night packet of the future was described as crossing the Atlantic, and it was curious that in that story Mr. Kipling should have chosen Trinity Bay as one of his termini. Trinity Bay was the first place of land they saw during the fog in Newfoundland. With regard to the commercial future of the airship, he was a great optimist. This was a fine opportunity for British enterprise to show a lead and see that Great Britain did not lose anything. The rôle of the airship was long-distance overseas flying, and long-distance non-stop overland flying. The rôle of the aeroplane and seaplane would not conflict with the rôle of the airship, and in commercial development the three would work together and be necessary the one to the other.

Maj. G. H. Scott, in responding, gave a *résumé* of their experiences during the voyage; he said it was a most fascinating experience to fly over a new country, particularly if it was unexplored. The effect of a thunderstorm on the airship was to throw it about, but not so violently as, in his opinion, would frighten ordinary passengers. Maj. Scott paid a generous tribute to the hospitality of the Americans at the landing, and to the splendid help they gave in mooring the ship. The voyage home was very easy, and practically without incident. With regard to the navigation of the ship by Maj. Cook, it was extraordinary. When they reached Ireland they were only about five miles from the place they had marked out. The work of the whole crew was beyond praise, and he was backed up perfectly by the officers.

Maj. Cook, R 34 navigation and log recorder, who also spoke, gave some details of his methods of navigation, and referred to the essential instruments besides the compass.

Capt. G. Adam thought the upper air at present was like an unexplored land. The phenomena were very startling, and quite a lot of exploring work would have to be carried out before the upper air navigation could be considered safe.

Gen. Brancker proposed the toast of "The Chairman," and the very successful evening closed.

British Flying Boats in Norway

ON July 20 the two British flying boats, which left Felixstowe some days previously for Norway, set out from Dundee at 10.30 a.m. After flying about 300 miles east they suddenly ran into dense fog; one boat, N 4044, piloted by Maj. Galpin and Capt. Scott, went down below the fog bank and safely reached the Norwegian coast; the other machine went above the fog and returned to Dundee. Maj. Galpin on the following day continued his trip to Christiansand, and on July 22 flew along the south-east coast of Norway to Christiania. On July 24 Queen Maud, a Lady-in-Waiting, and

Mr. E. Ovey, Charge d'Affaires, went for a flight over the city. Negotiations are said to be going on between the Norsk Luftfartrederi and a British aviation company with a view to opening up aerial communication between Great Britain and Norway this year or early next year.

British Seaplane Over Baltic

THE British seaplane E5-N 90, which flew from Felixstowe to Copenhagen on July 19 crossed the Baltic to Reval on the following day, and at 6 p.m. on July 21 safely arrived at Helsingfors, the destination of the Foreign Office official, who was a passenger.

SOME DEVELOPMENTS IN AIRCRAFT DESIGN AND APPLICATION DURING THE WAR

By the Right Hon. LORD WEIR OF EASTWOOD, P.C., Honorary Fellow of the N.E. Coast Institution of Engineers and Shipbuilders.

(Continued from page 991)

THE next type on our list is the S.E. 5 designed at the Royal Aircraft Establishment, Farnborough. This is really a direct descendant of the B.E. 2A with which we started. It was a very long time coming into general use, principally owing to delays with the engine, a 200 h.p. water-cooled French Hispano. Opinion was by no means unanimous as to the fighting value of this aeroplane compared with the Camel,

production, was never used at the front previous to the signing of the Armistice. This had another water-cooled engine—275 h.p. Rolls-Royce of high efficiency. Both aeroplane and engine were very good, and although the former was heavy and somewhat large, it was wonderfully manoeuvrable. The performance reached was very high—over 130 miles an hour at 15,000 ft. with a climb to that height in 12 mins.



Fig. 23.—One-seater fighter. S.E. 5.

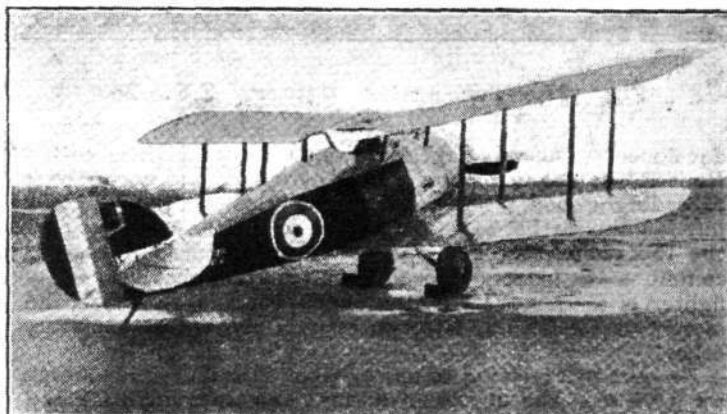


Fig. 24.—One-seater fighter. Sopwith Snipe.

and each type had its school of adherents. The S.E. 5 had a better performance, particularly at a height, was stable and manoeuvrable, very easy to fly, and had better visibility due to the pilot being farther back. On the other hand, it was much more difficult to produce, and the engine and its accessories gave a great deal of trouble both at home and in the field.

By this time we had reached a point where the performance

The increase in speed and climb from period to period is shown on Fig. 54.

Two-seated Fighters.—Apart from the particularly interesting case of the single-seaters, there developed from the use of the original reconnaissance type a demand for, and a supply of, two-seated fighting aeroplanes, which could do their reconnaissance work and defend themselves, if attacked. As the best method of defence has always been, and will be, to attack, these machines, which were in principle defensive, became very effective in the offensive. Our two-seated pusher fighters, such as the Vickers or the F.E. 2's, gave a very good account of themselves, until the time came when their poor performance, as compared with the tractors, put them out of date.

The first really good two-seated tractor was the 1½ Strutter, so called by the Sopwith Co. because of its peculiar wing strut system. This aeroplane was, and still is, one of the most efficient ever designed, and for its engine power (130 h.p. Clerget) it has never been surpassed. In it the pilot was placed as close up against the engine as possible with a very fine view ahead and downwards. The gunner was now put behind him with a rotatable Lewis gun turret. He had a very good view downwards and all round the rear. This arrangement, which is, in principle, still standard, gave a very manoeuvrable aeroplane owing to the concentration of the weights; and on account of its high performance the type became a very effective offensive weapon.

Early in 1917 there appeared another two-seated fighter where the qualities enumerated above were still further



Fig. 25.—One-seater fighter. Martinsyde F. 3.

of our aeroplanes was very considerably in advance of that of the Germans, who were cramped by their non-elastic engine policy.

The next type to come into general service was the Sopwith Snipe. The engine here was a 200 h.p. B.R. 2 of British design. It would appear that this size of air-cooled rotary engine has reached, if it has not in fact surpassed, the maximum size for efficiency. The performance was rather disappointing, and must be attributed to the enormous engine diameter and air resistance. Several competitive aeroplanes from different makers were tested simultaneously with this one, and the results were practically all the same. You will notice that the control surfaces are balanced. In this way the necessary manoeuvrability was maintained, although the weight of the aeroplane had reached rather a high figure. The actual selection of this type was largely governed by the engine position which entailed the placing of orders on a production scale before trials of the actual engine and aeroplane were carried out.

Finally we come to the Martinsyde F. 4, which, although in

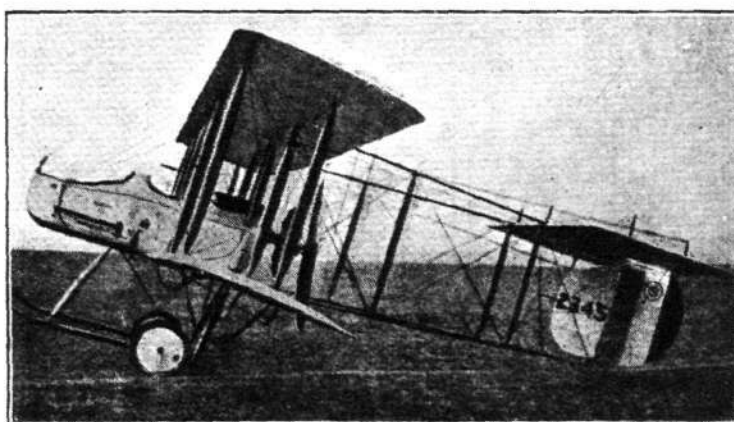


Fig. 26.—Two-seater fighter. Vickers gun-bus.

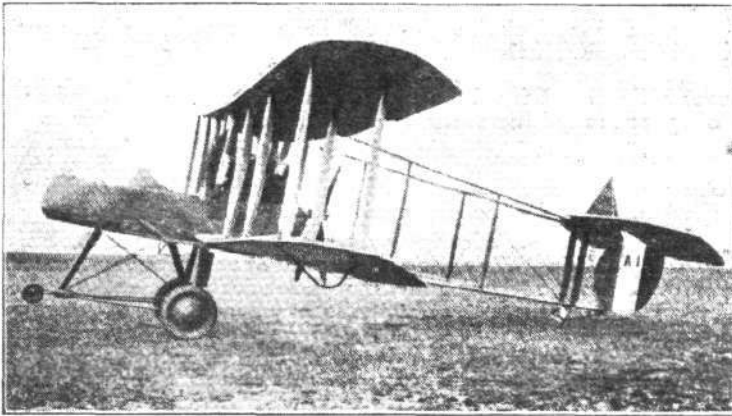


Fig. 27.—Two-seater fighter. F.E. 2b.

developed. This was Capt. Barnwell's Bristol Fighter with a Rolls-Royce Falcon engine. Both aeroplane and engine were exceedingly good. The view for the pilot was improved by putting him farther back and higher, so that he could see over the top plane, and being closer to his gunner, they could communicate better. Close communication in this sort of fighter is a very vital matter, and probably this type did more to establish our superiority over the enemy than any other.

Bombers.—Reverting to our original B.E. 2A's, from which we have seen the development into one-seated fighters and

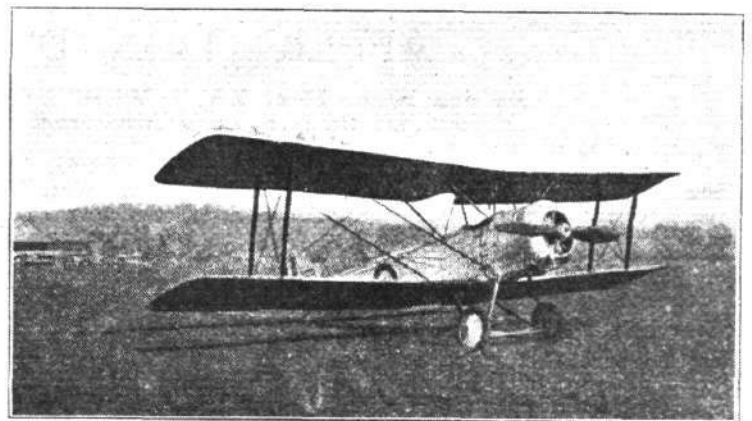


Fig. 28.—Two-seater fighter. Sopwith 1½ strutter.

by diving to a low height and planting the bombs by the pilot's judgment. Although great efforts were made in the training of bomb droppers and in the perfection of sighting and releasing apparatus, etc., accuracy from a height was never really obtained, and experiments conducted towards the end of last year, proved conclusively that the only way to hit any isolated object with certainty, was to dive to a low height before letting go the bombs. Nevertheless the moral effect of bombing is immense in disturbing industrial work and the manufacture of munitions.

With the introduction of the B.E. 2c, systematic bombing

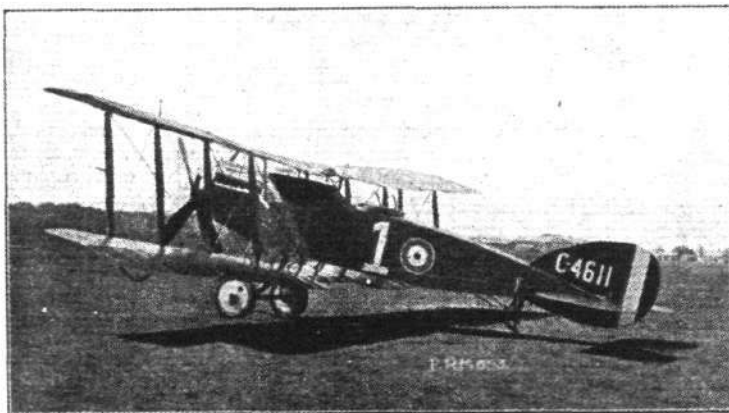


Fig. 29.—Two-seater fighter. Bristol Rolls-Royce.

two-seated fighters, we can trace also the development of the bomber. This was the type of aeroplane first used for bombing purposes, as soon as bombing, as a useful and military function, was appreciated. There were sporadic efforts at bomb dropping by 80 Gnome Avros, but when it developed into organised attacks with numbers of aeroplanes, the original reconnaissance type was used. As soon as the real requirements of this work were understood specially designed aeroplanes appeared. In the early types the bombs were fitted in all kinds of ingenious but crude ways, with pieces of string and cutting knives, etc., and the attacks were made

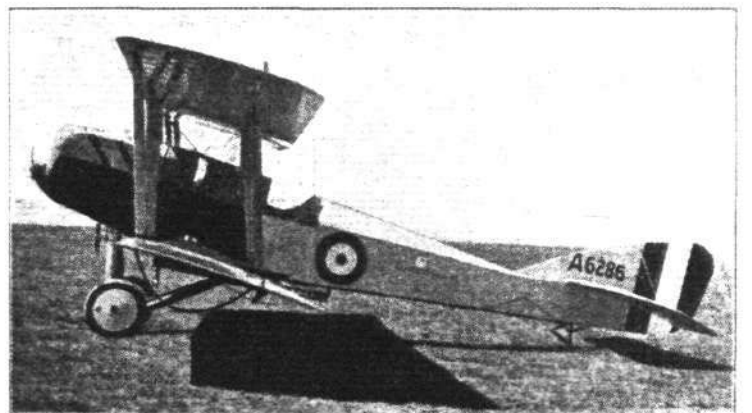


Fig. 30.—Day bomber. Martinsyde 160 h.p.

of the enemy's positions was carried out, but this aeroplane was capable of making comparatively short raids only, and when loaded with bombs could not carry an observer. With its moderate speed it was rather an easy prey for enemy scouts under such circumstances.

The Martinsyde single-seater bomber with the 120 and later the 160 Beardmore engine was a distinct advance as regards range, while its greater speed made it a much better fighter.

As bombing developed, a subdivision of types into definite branches took place. These were day bombers, short distance

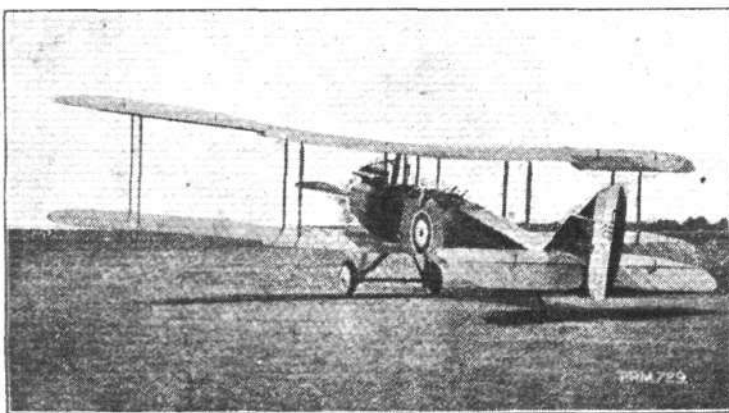


Fig. 31.—Day bomber. De Havilland 9.



Fig. 32.—Day bomber. De Havilland 9a.

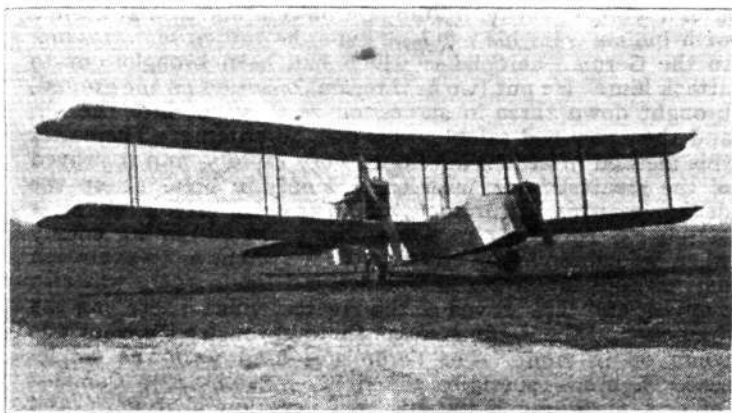


Fig. 33.—Day bomber. De Havilland 10a.

and long distance; and night bombers, short and long distance. From an aerodynamic point of view the design of a high speed, long range weight-carrying aeroplane is an exceedingly difficult problem, but it can be fairly stated that our designers, particularly Capt. De Havilland of the Aircraft Manufacturing Co., found the solution in advance of those of other countries. His aeroplanes eventually had wing surfaces of high efficiency and of high superficial loading, combined with structures of great cleanliness and low air resistance, and with the most powerful engines available at the time. Owing to their low weight per horse-power

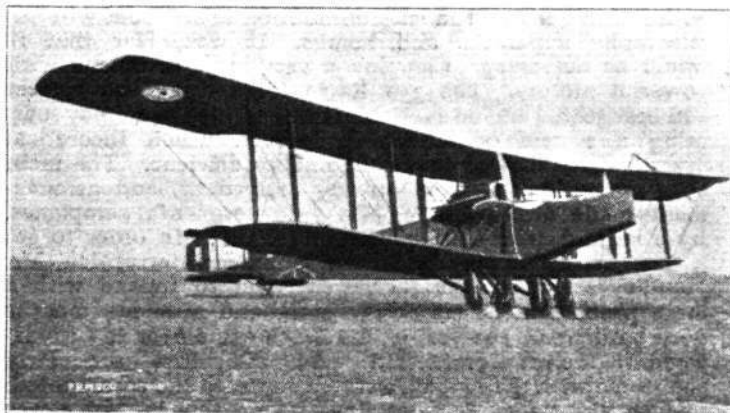


Fig. 34.—Night bomber. Handley Page 0/400.

bigger engines became available this bombing work was taken over by the F.E. 2 pushers which were good weight carriers and had a better view for bomb sighting.

The above remarks apply more to the military flying corps than to the naval service, which made use of any aeroplanes they could get hold of, particularly French ones, such as Caudrons and Farmans. Later they used the Sopwith 1½ Strutters, and finally Handley Pages. This latter type was the first really effective design of night bomber, and came into use early in 1917. Its general features are so well known that it is unnecessary for me to enlarge upon them. When

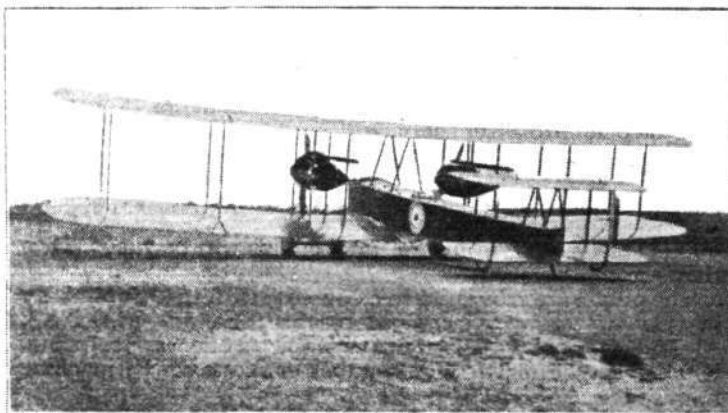


Fig. 35.—Night bomber. Vickers Vimy.

his machines could get off easily though at a high speed, and were very fast in the air. On returning home, after the fuel was consumed and the bombs dropped, they could land easily enough, but if by chance they had to land with full load on board, the pilot's difficulties were considerable.

Just as the original B.E. 2, was first used for bombing by day, similarly it was the first type to be largely employed for bombing by night, for which function it was very fairly suited, up to the limit of its capacity, as it was very easy to fly and to land. The weight-carrying capacity was, however not great, as the engine was only 70 to 100 h.p. When the

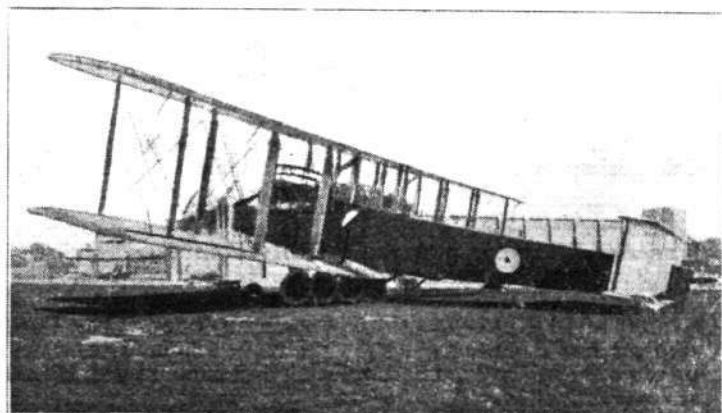


Fig. 36.—Night bomber. Handley Page V/1500.

in the autumn of 1917 a big programme of bombers was laid down this was the type decided upon. The Vickers-Vimy was a later machine of the same general type embodying more recent experience.

At the end of 1917 it was considered to be worth an attempt to make a very long range bomber, to attack Berlin itself, from a base in England. The actual point to point distance is about 450 miles and a minimum range of 1,100 miles was decided upon. As the aeroplane would have to fly by day, as well as during the night, it was essential to provide a very complete gun defence system. This meant a crew of seven,



Fig. 37.—Ground fighter. Sopwith Salamander.



Fig. 38.—Training machine. Avro.

with many guns and much ammunition apart from wireless telegraphy apparatus and bombs. It was clear that it would be necessary to employ a very large aeroplane with powerful motors. The 350 Eagle Rolls being the biggest and best geared engine available it was decided to employ four, using a system of tandem propellers, which theoretical investigation showed to be reasonably efficient. The main lines of the design were quickly arrived at, and arrangements made for the building of a few experimental aeroplanes, by a large firm of shipbuilders in Ireland. In order to get a straight run on the design and to avoid interruption, Mr. Handley Page, the designer, went over to Ireland with a large proportion of his design staff, and after six months very hard work, the first of the batch came over to Cricklewood, to be erected and tested. Many difficulties, particularly connected with the control, were encountered and surmounted, and on November 8, three days before the Armistice was signed, two of these aeroplanes were standing ready and fully equipped to start for Berlin.

Ground Fighters.

Armoured Aeroplanes.—In the very early days of the War the aeroplane had little to fear from enemy action provided it crossed the lines at any height above about 3,000 ft., so as to be out of range of ordinary rifle fire from the ground. The introduction of the special anti-aircraft gun, however, very quickly altered this state of affairs, and the aeroplane was driven higher as the accuracy of fire improved; until at the end of the War there was no immunity from danger from A.A. fire at a height of 20,000 ft.

For a long time it was considered that the risk of a low flying aeroplane being hit by rifle or machine gun fire from the ground was so great that we should not be justified in using our pilots and aeroplanes in this way. The remarkable escapes experienced from time to time by pilots forced to return across the lines at very low altitudes, however, encouraged the idea that the risks of low flying had been a good deal exaggerated, and a most effective mode of attacking the enemy was gradually developed. The first important success in this direction was, I believe, achieved by Lieut.-Col. Bishop, V.C., who attacked an enemy aerodrome soon

after daybreak. After riddling the officers' and men's quarters with bullets from his machine guns, he turned his attention to the German aeroplanes which had been brought out to attack him. He put two or three out of action on the ground, brought down three in succession as they got into the air, and then returned safely to his own aerodrome. Thereafter this method of attack developed very rapidly, and it proved of the greatest value later on, not only in breaking up the dense infantry formations advancing to attack us after March 21, 1918, but in demoralising the retreating enemy when we subsequently advanced. A system of co-operation between our low flying aeroplanes and the infantry was also evolved, and this proved of the greatest value in keeping the infantry and the headquarters behind in touch with what was going on in front. The aeroplanes used were the single-seater fighter—especially the light, manoeuvrable Camel—for attacking ground targets from very low altitudes; and the standard artillery machine for the infantry co-operation from rather greater altitudes.

Our casualties in these operations were naturally heavy, and the problem of providing a suitable armoured aeroplane arose. As a result the Sopwith "Salamander" was designed, and was just about to make its appearance in the field at the time of the Armistice. This was a single-seater fighter with B.R. 2 engine, equipped with two Vickers guns and a very large amount of ammunition for attacking ground targets, while it carried nearly 650 lb. of armour-plates so arranged as to give the pilot and all vital parts of the aeroplane adequate protection from German armour-piercing bullets fired from the shortest ranges. In spite of this heavy load it had a speed of 125 m.p.h., and was sufficiently manoeuvrable for the pilot to make the attack by diving at the target, thus getting the advantage of firing in the direction of flight. Had the War lasted a few months longer this aeroplane would probably have done most effective work in hastening the German retreat.

An armoured two-seater for infantry co-operation was also designed and produced, but like the Salamander it was too late to come into actual service.

(To be concluded.)

The Air Ministry and the "Daily Express" Prize

THE Editor of the *Daily Express* has received from Maj.-Gen. Sir F. H. Sykes, Controller-General of Civil Aviation, a letter in which he says: "The generous offer of the *Daily Express* has come at a most opportune moment, and will be of very great value in stimulating and encouraging British aircraft industries.

"I am most happy, therefore, to assure you of the wholehearted support of the Air Ministry in general and my own department in particular, and I trust that we shall have the early satisfaction of acknowledging success."

Maj.-Gen. Sykes has also offered a number of very helpful suggestions, and has promised to nominate an advisory member of the committee which is being formed to define in detail the conditions of the competition.

This nominee of the Air Ministry will have at his command all technical and meteorological data available. The Committee will also include two members nominated by the Royal Aero Club, one nominated by the Society of British Aircraft Constructors, and one nominated by the Royal Aeronautical Society.

Ways and Means to Encourage Commercial Aviation

THE *Daily Express* understands that a committee composed of members of the Air Ministry and two representatives of the aircraft industry—Mr. H. White-Smith, chairman of the Society of British Aircraft Constructors, and Mr. Cary, of the Sopwith Aviation Co., Ltd.—under the presidency of Maj.-Gen. Seely, Under-Secretary of State for Air, is now investigating ways and means to encourage the production, of the best type of commercial aeroplane. Reliability, safety, and practical utility are determining factors in these deliberations.

It is understood that considerable State subsidies for commercial flying will be recommended and taken up.

Infringement of Air Navigation Regulations

THE Air Ministry makes the following announcement:—

It is notified that though the Air Navigation Regulations have been in force since May 1, and it is felt that pilots and others have now had ample opportunity of acquainting themselves with the Regulations, numerous instances of their infringement are still being reported.

The regulations were made with a view to securing the

public safety, and, in future, proceedings will be taken when they are contravened.

The public are requested to co-operate with the Air Ministry in this matter by forwarding to the Secretary (C.G.C.A.), Air Ministry, London, particulars of alleged offences, including, if possible, the registration number or mark of the machine in question.

The most common instances of infringement are:—

1. Dropping leaflets and other advertising matter. (For the purposes of the Victory Loan Campaign the Secretary of State for Air waived the provision in the Regulations against the dropping of leaflets from aircraft; but the exemption has now been withdrawn.)

2. Taking up and landing passengers as a regular proceeding at places which have not been licensed as aerodromes.

3. Low flying (a) Over towns; (b) To the danger of the public elsewhere.

4. Neglecting to obliterate military markings when a machine has ceased to be a military machine.

5. Obscuring registration marks by means of advertisements or otherwise.

The St. Pancras Cadet Corps

THE good work done by the aircraft school organised in connection with the St. Pancras Cadet Corps is attracting international notice. Gen. Corvisart, the French Military Attaché, Commandant Sable, the French Air Attaché, and his Aide-de-camp, visited the school on Saturday, and were received by Maj.-Gen. Philip Game, Director of Training and Organisation, Air Ministry, Col. T. Gerrard, Major Moore, and Sir Willoughby Dickinson. Sir Willoughby Dickinson said that, although the aircraft school was only in the nature of an experiment, they were certainly justified in believing that it would be attended with big results. There must be thousands of boys longing to get up into the clouds, but before they could achieve that ambition they must learn aeroplane construction and master the science of aircraft.

Maj.-Gen. Game said he could see a friendly rivalry between the school and the Air Ministry in obtaining boys. The Air Ministry wanted as many boys as they could get between 15 and 16, and were willing to train them for three years. It would, therefore, be an enormous help if the school could assist the Air Ministry in this direction by instructing boys in aircraft.

HONOURS

It was announced in a supplement to the *London Gazette* on July 15 that the King has been pleased to approve of the following awards of the Distinguished Flying Cross, conferred by the General Officer Commanding the British Army in Mesopotamia:—

Distinguished Flying Cross

Capt. J. S. Beatty, 72nd Squadron.—During the operations near Sheroot, October 24 to 30, 1918, he rendered gallant service in harassing the enemy by machine-gun fire from very low altitudes, being vigorously fired upon the whole time. Capt. Beatty has always been conspicuous for gallantry and devotion to duty. On April 21, 1918, he destroyed one enemy machine and brought down another out of control.

Lieut. S. Bull, 30th Squadron.—Whilst engaged in bombing and machine-gunning hostile tribesmen at Khun, near Bushire, on March 6, 1919, he saw that a brother officer had been shot down. Hoping that he might be alive, he attempted to land on absolutely unsafe ground at very close range fire from the enemy, but after touching the ground 12 yards from the crashed machine he saw at once that no hope could be entertained that the occupant was alive, by reason of the condition of the wreck, and he was accordingly compelled to abandon further action. The attempt at rescue involved much risk, as had he actually landed it is improbable that he would have been able to take off again, apart from the attention which the tribesmen would have given him at that time.

Capt. F. Nuttall, M.C., 30th Squadron. A gallant flight leader who has rendered valuable services in carrying out the most arduous duties in action, and has commanded his flight with great skill under exceptionally difficult conditions. On April 27, 1918, near Kirkuk, whilst engaged in attacking enemy troops from a low altitude, he was shot down, wounded.

Lieut. M. S. Mackay, 72nd Squadron, and Lieut. R. P. Pope, 72nd Squadron (E. Surr. R.).—During the operations at Baku between August 25 and September 13, 1918, they flew continuously over the enemy's positions, bombing and machine-gunning from low altitudes with great effect, in the face of very vigorous fire from the enemy throughout the whole period.

FOREIGN DECORATIONS.

The King has granted unrestricted permission for the wearing of the following decorations, conferred on the officers and other ranks indicated for valuable services rendered in connection with the war:—

Conferred by the President of the United States American Distinguished Service Medal

Maj.-Gen. Sir H. M. Trenchard, K.C.B., D.S.O. (R. Sc. Fus.); Maj.-Gen. Sir J. M. Salmond, K.C.B., C.M.G., C.V.O., D.S.O. (R. Lanc. R.); Maj.-Gen. Sir F. H. Sykes, K.C.B., C.M.G. (15th Hussars); Lieut.-Col. P. H. L. Playfair, M.C. (R.A.); Maj. (A./Lieut.-Col.) E. R. Peal, O.B.E., D.S.C.; Maj. D. V. J. Blake (Aust. F. Corps); the Rt. Hon. Lord Weir of Eastwood, P.C., late Secretary of State for the Royal Air Force.

Conferred by the President of the French Republic

Croix d'Officier, Legion d'Honneur

Maj. (A./Lieut.-Col.) E. R. Peal, O.B.E., D.S.C.; Lieut.-Col. (A./Brig.-Gen.) J. G. Weir, C.M.G., C.B.E. (R.A., T.F.).

Croix de Chevalier, Legion d'Honneur

Capt. (A./Maj.) R. Addenbrooke-Prout, O.B.E., M.C.; Maj. F. C. Baker, D.F.C., A.F.C. (D.C.L.I.), 202nd Sqdn.; Lieut.-Col. A. V. Bettington, C.M.G.; Maj. B. L. Huskisson, D.S.C.; Maj. G. H. Loxley; Lieut. (A./Capt.) D. R. MacLaren, D.S.O., M.C., D.F.C. (46th Sqdn.); Lieut.-Col. H. A. Van Ryneveld, D.S.O., M.C.

Croix de Guerre avec Palme (French)

Lieut. (A./Capt.) W. G. Albu (N. Russia); Lieut. (A./Capt.) O. M. Baldwin, D.F.C., 9th Brig., France; Lieut. A. M. Bannatyne, 206th Sqdn., France; Lieut. (A./Capt.) G. L. Graham, D.F.C., 9th Brig., France; Lieut. (A./Capt.) W. B. Green, D.F.C., 9th Brig., France; Maj. S. G. Hodges, M.C., A.F.C. (Wilts.), Salonika; Col. A./Brig.-Gen. R. E. T. Hogg, C.M.G., C.I.E. (I.A.), France; Maj. (A./Lieut.-Col.) A. V. Holt, D.S.O. (Roy. Hs.), France; Maj. B. L. Huskisson, D.S.C., France; Sec. Lieut. (Obsr.) J. McDonnell, Russia; Lieut. (A./Capt.) D. R. MacLaren, D.S.O., M.C., D.F.C., France; Lieut. H. A. Miller, North Russia; Sec. Lieut. H. J. Miles, 100th Sqdn., France; Lieut.-Col. R. P. Mills, M.C., A.F.C. (Roy. F's.), France; Sec. Lieut. (Obsr.) N. D. Nunan, North Russia; Capt. R. A. Preeston, France; Sec. Lieut. E. C. M. Reid, North Russia; Lieut. (A./Capt.) E. J. Salter, 9th Brig., France; Lieut. H. W. Tait, D.F.C., 11th Bal. Sec., France; Sec. Lieut. F. F. Tattam, North Russia; Capt. H. W. Woollett, D.S.O., M.C. (Linc. R.), France; 64052 A./M. 2 V. R. Bates, 16th Bal. Sec., France; 2249 S./Mech. H. W. Bush, 98th Sqdn., France; 23964 A.M.I. W. Lambert, 11th Bal. Sec., France; 140801 Sgt./Mech. E. R. MacDonald, 98th Sqdn., France; 15399 Sgt. S. B. Percival (Manc. R.), att'd. 27th Sqdn., France (killed Aug. 14, 1918); 25013 Sgt. L. C. Owens, 103rd Sqdn., France; 224398 Pte. C. H. Taylor, 97th Sqdn., France.

The Medaille d'Honneur

41300 A./M. 2 G. K. Balls, 56th Sqdn. (en bronze); 42624 A./M. 1 A. Cook, 31st Bal. Sec. (en bronze); 44463 A./M. 3 C. Dickenson, 100th Sqdn. (en bronze); 1888 Ch. M. (M. F. L. Dorber, 2nd A.S.D. (en vermeil); 1749 Ch. Mech. F. Francis, 3rd R.L.P. (en argent); 5888 Ch. Mech. C. M. Hayden, 100th Sqdn. (en argent); 3959 A./M. 1 L. E. Hodges, 12th Sqdn. (en bronze); 8989 Ch. M. (M. W. P. McElwee, 1 A./D. (en argent) 18305 Flt.-Clk. T. H. Phelps, 2 A./D. (en argent); 13769 A./M. 1 E. L. Porter, 10th Sqdn. (en bronze) 24255 A./M. 1 J. Saltzberg, 1 A.S.D. (en bronze); 37581 A./M. 3 W. S. Taylor, 55th Sqdn. (en bronze); 26570 Cpl. F. Timms, 2 A./D. (en bronze); 23000 Clk. 1 H. J. Walters, 1 A.D. (en bronze).

Awarded the Medaille Militaire

202763 Sgt. P. J. Adkins, D.S.M., D.F.M. (Woolacombe); 406711 Sgt. A. S. Allan, M.M., Perth; 313629 Sgt./Mech. L. G. S. Boshier (Reading); 104285 A./M. 2 T. Ferguson, Glasgow; 313774 A./C. 1 R. A. Hollingsbee, (Stifford, Essex); 407061 Sgt. G. Howard (Bradford-on-Avon); 10865 Cpl./Mech. S. H. Howling, Peterborough; 26670 Cpl. (A./Sgt./Mech.) T. J. Hyde, (Portadown); 207607 Sgt./Mech. C. J. E. Jones, Cardiff; 76185 A./M. 1 T. McDermott (Wakefield).

Conferred by the King of the Belgians

Croix de Commandeur de L'Ordre de Leopold

Maj.-Gen. Sir W. S. Branner, K.C.B., A.F.C. (R.A.), Retired List; Maj.-Gen. Sir F. H. Sykes, K.C.B., C.M.G. (15th Hrs.).

Croix d'Officier de L'Ordre de Leopold avec Croix de Guerre

Lieut.-Col. H. A. V. Ryneveld, D.S.O., M.C.

Croix de Chevalier de l'Ordre de Leopold, et Croix de Guerre avec Palme

Capt. (A./Maj.) C. G. Beatson (Midd'x R.); Capt. (A./Maj.) J. A. Cochrane, M.C. (5th R. Sc. F.); Maj. (A./Lieut.-Col.) J. A. Cunningham, D.S.O., D.F.C. (R.A.), Retired List; Lieut.-Col. H. M. Meyler, D.S.O., M.C. (Bord. R.).

Croix de Chevalier de l'Ordre de la Couronne, et Croix de Guerre avec Palme

Lieut.-Col. A. S. Barratt, C.M.G., M.C. (R.A.); Maj. G. Henderson (C.I. Horse); Maj. R. E. Saul, D.F.C., 4th Sqdn.; Lieut. F. Whitehead, late 5th Sqdn. (Lanc. Yeo.).

Croix de Guerre (Belgian)

Lieut. A. H. A. Alban, D.F.C., 53rd Sqdn. (R.F.A.); Lieut. H. A. Allback, 36th Bal. Sec.; Lieut. (A./Capt.) C. P. Allen, 204th Sqdn.; Lieut. E. O. Aumm, D.F.C., 29th Sqdn.; Maj. A. R. Arnold, D.S.C., D.F.C., 79th Sqdn.; Capt. R. N. G. Atkinson, M.C., D.F.C., 206th Sqdn.; Lieut. C. T. Aulph, 10th Sqdn.; Capt. G. W. Biles, D.F.C., 202nd Sqdn.; Capt. (A./Maj.) G. H. Bowman, D.S.O., M.C., D.F.C. (3rd R. War.), 41st Sqdn.; Lieut. N. K. Brooks, 32nd Bal. Sec. (R.F.A., S.R.); Sec. Lieut. H. D. Buchanan, 108th Sqdn.; Sec. Lieut. C. H. Bullen, 10th Sqdn.; Capt. L. A. K. Butt, 2nd Bde. (S. Staffs. R.); Capt. (A./Maj.) K. L. Caldwell, M.C., D.F.C., 74th Sqdn.; Sec. Lieut. R. O. Campbell, 65th Sqdn.; Maj. G. V. Carey, 2nd Wing (Rif. Bde.); Sec. Lieut. (Hon. Capt.) W. A. Carrothers, D.F.C., 206th Sqdn. (Can. Inf.); Sec. Lieut. (A./Capt.) H. G. Clappison, 204th Sqdn.; Sec. Lieut. C. A. Crichton, 70th Sqdn.; Capt. S. L. Dashwood, M.B.E., 2nd Bde.; Lieut. C. Davies, 23rd Bal. Sec.; Sec. Lieut. D. W. Davies, 217th Sqdn.; Sec. Lieut. E. G. Davies, D.F.C., 29th Sqdn.; Maj. C. H. Dixon, M.C., D.F.C., 29th Sqdn. (York. L.I.); Lieut. L. L. Falck, 36th Bal. Sec.; Sec. Lieut. S. E. Foreman, 7th Sqdn.; Sec. Lieut. A. J. Garside, D.F.C., 206th Sqdn.; Lieut. (A./Capt.) J. S. Giffard, 5th Bal. Co.; Lieut. (A./Capt.) F. W. Gillett, D.F.C., 74th Sqdn.; Capt. A. W. F. Glenny, M.C., D.F.C. (R.A.S.C.); Maj. G. W. M. Green, D.S.O., M.C., 70th Sqdn.; Sec. Lieut. F. S. Gordon, D.F.C., 74th Sqdn.; Capt. H. W. Guy, 11th Wing; Capt. D. S. W. Hambley, 11th Aircraft Park; Lieut. (A./Capt.) T. S. Harrison, D.F.C., 29th Sqdn.; Sec. Lieut. (Hon. Lieut.) J. B. Heppel, 206th Sqdn.; Sec. Lieut. (A./Capt.) O. A. P. Heron, D.F.C., 70th Sqdn.; Lieut. J. Hetherington, 214th Sqdn.; Lieut. G. S. Hodson, A.F.C., 213th Sqdn.; Lieut. (A./Capt.) M. L. Horn, 2nd Bde.; Lieut. C. H. Jenkinson, 9th Bal. Sec.; Lieut. G. R. Judge, 217th Sqdn.; Lieut. E. B. Keele, 39th Bal. Sec.; Lieut. (A./Capt.) A. C. Kiddie, D.F.C., 74th Sqdn.; Lieut. (A./Capt.) C. H. R. Lagesse, D.F.C., 29th Sqdn.; Lieut. (A./Capt.) W. J. Mackenzie, D.F.C., 213th Sqdn.; Capt. (A./Maj.) C. T. MacLaren, O.B.E., 206th Sqdn.; Sec. Lieut. H. McLean, D.F.C., 206th Sqdn.; Lieut. M. P. MacLeod, D.F.C., 41st Sqdn.; Maj. C. G. Martyn, 2nd Aircraft Park (1st Mon. R.); Lieut. G. Mawer, 204th Sqdn.; Lieut. A. R. Morrison, 15th Bal. Sec.; Maj. K. D. P. Murray, M.C., 10th Sqdn.; Lieut. M. Nichol, 214th Sqdn.; Lieut. J. J. W. Nicholson, D.F.C., 202nd Sqdn.; Lieut. F. St. J. North, 23rd Sqdn., Bal. Sec.; Maj. E. W. Norton, D.S.C., 204th Sqdn.; Sec. Lieut. (Hon. Lieut.) C. M. W. Park, 2nd Res. Lorry Park; Maj. S. J. Payne, 5th Aircraft Park; Lieut. C. W. Payton, 210th Sqdn.; Lieut. (A./Capt.) F. Pratt, 38th Sqdn.; Lieut. (A./Capt.) C. G. Ross, D.F.C., 29th Sqdn.; Capt. (A./Maj.) F. T. Ryan, M.C., 2nd Wing (R.G.A.); Sec. Lieut. M. G. Ryan, 10th Sqdn.; Lieut. W. W. Saunders, 7th Sqdn.; Lieut. R. H. Schroeder, late 4th Sqdn. (Can. Inf.); Lieut. R. A. Skelton, 25th Bal. Sec. (R.G.A., S.R.); Capt. (A./Maj.) J. B. Solomon, M.C., 82nd Sqdn.; Capt. D. S. Stevenson, M.B., M.B.E., 217th Sqdn.; Maj. (A./Lieut.-Col.) B. E. Sutton, D.S.O., O.B.E., M.C., 7th Sqdn. (West. and Cumbl. Yeo.); Lieut. E. G. L. Ward, 4th Sqdn.; Sec. Lieut. H. R. Watterson, 38th Bal. Sec.; Lieut. (A./Capt.) I. Welby, M.C., D.F.C., 7th Sqdn.; Lieut. G. A. Welsh, 210th Sqdn.; Lieut. E. H. Wilford, 2nd Bal. Sec.; Capt. E. A. E. Wood, 2nd Bde.; Sec. Lieut. H. C. Wood, D.F.C., 48th Sqdn.; Lieut. F. Coolley, D.F.C., 79th Sqdn.; 214412 Sgt.-Mech. G. Betteridge, D.F.M., 206th Sqdn.; 52748 Cpl.-Mech. F. H. C. Bishop, 38th Bal. Sec.; 13489 A.M./1 D. A. Bissett, 4th Sqdn.; 223740 Sgt.-Mech. J. Chapman, D.F.M., 206th Sqdn.; 23702 A.M./1 W. M. Cutts, 7th Bal. Co.; 24059 A.M./1 W. Dick, 17th Bal. Co.; 34165 Sgt.-Clk. J. Elliott, 10th Wing; 4447 Sgt.-Mech. N. Lynn, 4th Sqdn.; 93272 Sgt.-Mech. G. I. Packman, D.F.M., 206th Sqdn.; 6260 Sgt.-Mech. J. E. Walsh, 4th Sqdn.

Croix de Chevalier de l'Ordre de Leopold II., avec Croix de Guerre
100083 Sgt.-Mech. N. Hunt, 48th Sqdn.; 175 Sgt.-Maj. C. E. Martin, 74th Sqdn.; 4201 Chf. Mech. B. W. Wilson, 5th Sqdn.

Decoration Militaire avec Croix de Guerre

8886 Ch. Mtr. Mech. J. F. Biggs, 65th Sqdn.; 8715 1st C. Pte. C. H. Bird, 2nd Bde.; 24154 Cpl. H. A. Horne, 39th Bal. Sec.; 18875 1st C. Pte. E. Nancekivell, 2nd Bde.; 15342 Cpl.-Mech. G. Smith, 25th Bal. Sec.; 110761 Sgt.-Mech. R. L. G. White, 48th Sqdn.; 134872 Cpl. H. Wildman, 2nd Wing.

Conferred by the King of Italy.

Cavaliere of the Order of the Crown of Italy

S. Lieut. V. Lowe.

Silver Medal for Military Valour

Capt. (A./Maj.) A. B. Shearer, Capt. H. F. Delarue, D.F.C., Capt. H. L. Nunn, D.S.C., D.F.C.

Bronze Medal for Military Valour

Lieut. S. J. Chamberlain, D.F.C., Sec. Lieut. J. McDonald, D.F.C.

The Croce di Guerra

Lieut. A. C. Getly, Capt. (A./Maj.) A. B. Shearer.

Awarded the Libyan Medal

For services rendered in conjunction with the Italian Forces at Misurata: Capt. S. E. Ball, D.F.C.; Lieut. L. de V. Chisman; Lieut. (A./Capt.) C. Chimes; Sec. Lieut. J. A. Munn; Capt. R. J. F. Sullivan; 208273 Sgt. K. E. Dawson (Eastbourne); 232635 A./M. 1 G. F. Florant (Fulham, S.W.); 204444 Sgt. H. W. Groombridge (Notting Hill, W.); 210629 A./M. 1 F. R. Heckford (Ongar, Essex); 234864 A./M. 1 P. Kelly (Glasgow); 208592 Sgt. A. F. Millier (Forest Gate, S.E.); 211578 A./M. 1 H. Singleton (Garstang).

Conferred by the King of the Hellenes.

Greek Medal of Military Merit

Sec. Lieut. J. W. Hoskings, M.B.E., Capt. H. G. Harrison, Sec. Lieut. G. J. Stroud, M.B.E.

Cross of Officer, Royal Hellenic Order of the Redeemer

Maj. F. W. Gamwell, Maj. J. Weston.

Chevalier of the Royal Order, George I

Lieut. S. W. Briggs, Lieut. T. F. Clarke, Lieut. R. W. Kerr, Lieut. C. H. A. Willett.

Conferred by the King of Rumania

Star of Rumania (Officer)

Maj. J. P. C. Cooper, O.B.E., M.C., 10th Bde.

Star of Roumania (Chevalier)

Lieut. (A./Capt.) C. C. A. Pelham, France; Sec. Lieut. (Hon. Capt.) (A./Capt.) H. W. Stockdale, D.F.C., 101st Sqdn.

Crown of Roumania (Chevalier)

Lieut. F. H. Knobel, 10th (A.) Wing, 40th Sqdn.

Order of Michael the Brave, 3rd Class

Lieut. J. A. Parkinson, 201st Sqdn.; Lieut. L. H. Ray, 91st (A.) Wing, 19th Sqdn.

Croix de Virtute Militara, 2nd Class

222516 Sgt. C. H. O. Allwork, 10th (A.) Wing, 98th Sqdn.; 27932 A./M., 1st Class, H. A. Lockington, 5th Balloon Wing; 77988 A./M., 1st Class, J. Melia, 19th Bal. Sec.; Aus./740 Ch. Master Mech. A. Taylor, 3rd Sqdn., Aust. Flying Corps, France.

Medaille Parbatie si Credinta, 1st Class

2547 Ch. M./Mech. W. E. Bennett, 84th Sqdn.; 49532 S./Maj. G. Dixon, France; 200599 S./Maj. S. P. Finch, 10th (A.) Wing, 203rd Sqdn.; 16667 Ldg. A./C. F. Murphy, 5th Balloon Wing.

Medaille Parbatie si Credinta, 2nd Class

115891 Sgt. W. M. Brims, France; 124479 A./C., 1st Class, A. H. Searle, 5th Balloon Wing.

Medaille Parbatie si Credinta, 3rd Class

5 S./Maj. W. E. Moore, 9th Sqdn.; 42833 A./M., 1st Class, A. E. Seed, 1st Balloon Wing; 18011 1st A./M. A. S. Wilson, France.

Conferred by the Sultan of Egypt

The Order of the Nile, 3rd Class

Lieut.-Col. (A./Brig.-Gen.) P. L. W. Herbert, C.M.G., C.B.E. (Notts and Derby R.); Lieut.-Col. C. E. Risk, D.S.O., (R.M.L.I.).

The Order of the Nile, 4th Class

Capt. (A./Maj.) F. G. Brown, O.B.E.; Capt. W. H. Dolphin; Maj. W. D. Long, O.B.E.; Maj. (A./Lieut.-Col.) S. S. Nevill, O.B.E.

Conferred by the Emperor of Japan.

4th Class, Order of the Rising Sun

Capt. (A./Maj.) G. de L. Woodbridge, O.B.E.
NOTE.—The "Acting Ranks" indicated against names in this *Gazette* have been relinquished in the great majority of cases since the commencement of the printing, and in many cases the officers and other ranks have been demobilized.

Corrections.

The following are the correct descriptions of officers whose names appeared in the *Gazettes* indicated, in connection with the grant of decorations or Mentions in Despatches:—

Lieut.-Col. Sir H. Fowler, K.B.E. (*Gazette* No. 31297, April 15; Maj. W. D. Long, O.B.E. (*Gazette* No. 31098, Jan. 1); Capt. L. E. Lander, M.B.E. (*Gazette* No. 31098, Jan. 1); Capt. J. H. Cooke, M.B.E., M.B. (R.A.M.C., Egypt) (*Gazette* No. 31098, Jan. 1); Lieut.-Col. N. J. Roche, O.B.E. (*Gazette* No. 31378, June 3); Sec. Lieut. (A./Maj.) A. R. Fulton, M.B.E. (*Gazette* No. 31378, June 3); Capt. W. Hayward, M.B.E., No. 4 Group (*Gazette* No. 31378, June 3); Capt. (A./Maj.) P. P. C. Penberthy (Shrops L.I.) (this officer's name appeared in the list of awards of the fifth grade of the Military Division, British Empire Order, in the *London Gazette* of June 3 (No. 31378), instead of in the list of appointments to the fourth grade (O.B.E.), and the correction is hereby authorised); Lieut.-Col. W. S. Featherstonhaugh, Can. For. Corps, att'd. to the R.A.F., France (the announcement of the award of the 4th grade, British Empire Order, in *Gazette* No. 31378 of June 3 is cancelled, this officer having been awarded a higher grade); Col. the Rev. R. E. V. Hanson, O.B.E., Dep. Chapl.-in-Chief, R.A.F. (the announcement published in *Gazette* No. 31378 June 3 (award of O.B.E.), is cancelled, this reward having been also published in *Gazette* No. 31377 of same date); Lieut. C. W. Seymour-Hall (mentioned in Despatches, *Gazette* No. 31378, June 3); No. 91975 Sgt.-Obsr. L. H. Rowe, D.F.M. (*Gazette* No. 31378, June 3); Lieut. (A./Capt.) G. B. Irving, D.F.C., 19th Sqdn., R.A.F., att'd. 10th (Army) Wing, France (D.F. Cross gazetted Aug. 3, 1918) (deceased).

Capt. C. B. Belt, M.B.E., M.C., D.C.M. (S. Staff. R.) (*Gazette* 31378, June 3); Deputy Adm. Mrs. F. Day, M.B.E. (W.R.A.F.), (*Gazette* 31378, June 3); Maj. (A./Lieut.-Col.) A. Levick, O.B.E. (former service in C. Gds.) (*Gazette* No. 31378, June 3); Capt. W. J. Cooper, M.B.E., Aust. F. Corps, Recording Offr., France (*Gazette* No. 31378, June 3); Lieut. P. A. McBain, M.B.E., Aust. F. Corps, Palestine (*Gazette* No. 31378, June 3); Lieut. (A./Capt.) D. W. Grinnell-Milne, D.F.C. (R. Fus.), 56th Sqdn., France (*Gazette* No. 31378, June 3, Bar to D.F. Cross); No. 8398 Sgt.-Maj. G. Gillman, 53rd Sqdn., France (the announcement of award of Meritorious Service Medal in *Gazette* No. 31098, Jan. 1, is cancelled, this award having been already published in *Gazette* No. 30722, June 3, 1918); No. Aus./124 Flight-Clk. J. H. Rogers, Aust. F. Corps, awarded the Meritorious Service Medal in *Gazette* No. 30624, April 11, 1918, for services in connection with the capture of Jerusalem; the second announcement of this reward, which appeared in *Gazette* No. 31378, June 3, is accordingly cancelled; Maj. H. G. Atkinson, O.B.E., R.A.F., awarded the O.B.E. in *Gazette* No. 31099, Jan. 1; the second announcement in *Gazette* No. 31098 of the same date is accordingly cancelled.

The Military Medal

War Office, July 15.

The King has approved of the award of the Military Medal for bravery in the field to the following warrant officer, non-commissioned officers, and men, R.A.F., for services in France, except where otherwise stated:—

9991 Cpl. L. Briffault, 41st Sqdn.; 35291 Flt.-Sgt. A. Carey, 15th Bal. Co.; 23271 Sgt. A. Clark, 11th Bal. Sec.; 31415 Cpl. W. Clayton, 4th Sqdn.; 47099 A.M./2 F. E. Cursley, 149th Sqdn.; 24982 Cpl. C. J. F. Gibson, 8th K.B. Sec.; 10098 Cpl. G. L. Goodger, 59th Sqdn.; 37515 L.A.C., P. E. Groves, 65th Sqdn.; 10618 Cpl. E. J. Iredale, No. 1 Aircraft Depot; 13677 Ch. Mech. P. Junor, 15th Bal. Sec.; 7740 L.A.C./A./L./Cpl. R. King, 15th Wing; 96727 A.M./2 C. S. Lacey, att'd. 199th S. By., R.G.A.; 129247 A.C./2 B. H. Patman, 45th Balloon Sec.; 36344 Flt.-Sgt. P. F. Renwick, 14th Bal. Co.; 13345 L.A.C./A./Cpl. H. Saunders, 7th Sqdn.; 11081 Sgt. R. Sutherland, 7th Sqdn.; 20827 A.C. 1 H. P. White, 1st K.B. Sec.; 134872 Cpl. H. S. Wildman, 7th Sqdn.; 53074 A.M./2 J. Wood, 41st Sqdn.; 54048 A.C./2 H. W. Young, 14th Bal. Sec.; 404221 A.M./2 G. I. Tracey, Wireless Sec. (Mesopotamia).

NOTE.—Officers and other ranks of the R.A.F. whose names have appeared in the *London Gazette* as having been awarded Foreign Decorations, but who have not received them, are requested to inform the Secretary of the Air Ministry on October 1, 1919, should the decorations not be received meanwhile. The designation of the Decoration and the date of the *Gazette* in which the announcement appeared should be specified.

It was announced in a supplement to the *London Gazette* of July 15 that the King has been pleased to approve of the award of the following honour and decorations to the undermentioned officers:—

Distinguished Service Order

Comdr. F. R. Wrottesley, R.N.—For distinguished services in command of No. 14 Kite Balloon Section in Mesopotamia from August, 1916, to February, 1917.

Distinguished Service Cross

Lieut. D. R. Verey, R.N.V.R. (now Capt. R.A.F.)—For distinguished services with No. 14 Balloon Section in Mesopotamia from August, 1916, to February, 1917.

Flt. Sub-Lieut. M. Lyon, R.N.A.S. (now Capt., R.A.F.)—For distinguished services with No. 14 Kite Balloon Section in Mesopotamia, from August, 1916, to Feb., 1917.

O.B.E. (Military Division)

Flt. Lieut. A. W. Cassy, R.N.A.S. (now Capt., R.A.F.)—For valuable services with No. 14 Kite Balloon Section in Mesopotamia from August, 1916, to February, 1917.

Mentioned in Despatches

INCLUDED in the list of names brought to the notice of the Secretary of State for War by Field-Marshal Sir Douglas Haig, K.T., G.C.B., O.M., G.C.V.O., K.C.I.E., late Commander-in-Chief, the British Armies in France, of those who served under his command during the period Sept. 16, 1918, to March 15, 1919, whose distinguished and gallant services and devotion to duty he considered deserving of special mention, were the following:—

Royal Air Force

Commands and Staff

Charlton, Col. (A./Brig.-Genl.) L. E. O., C.B., C.M.G., D.S.O. (Lan. Fus.). Ellerton, Capt. (A./Maj.) A. S., O.B.E.
Festing, Col. (A./Brig.-Genl.) F. L., C.B., C.M.G. (North'd. Fus.). Holt, Lieut.-Col. F. V., C.M.G., D.S.O. (O. and B. L.I.). Ludlow-Hewitt, Lieut.-Col. (A./Brig.-Genl.) E. R., C.M.G., D.S.O., M.C. (R.I. Rifles).
Pitcher, Maj. and Lt. Lieut.-Col. (A./Brig.-Genl.) D. le G., C.M.G., C.B.E., D.S.O. (39th Horse, I.A.).

Adam, Sec. Lieut. A. M., 211th Sqdn.; Albert, Sec. Lieut. G.; Amor, Lieut. (A./Capt.) S. L., M.B.E., H.Q. 10th Bde.; Anderson, Capt. (A./Maj.) W. H., D.F.C., 3rd Sqdn., Aust. F.C.

Baird, Lieut. J., 88th Sqdn.; Baker, Sec. Lieut. F.; Baker, Capt. G. B. A., M.C., 53rd Sqdn., 2nd Bde. (R. Berks. R.); Banks, Lieut. (A./Capt.) C. C., M.C., D.F.C., 43rd Sqdn., 2nd Bde. (R.W. Fus.); Baron, Lieut. H. K., 2nd Sqdn.; Barratt, Lieut.-Col. A. S., C.M.G., M.C. (R.A.); Barrett, Lieut. A. G., 3rd Sqdn., Aust. F.C.; Barton, Lieut. T. H., 140th Sqdn., 2nd Bde.; Batchelder, Lieut. W. (3/2nd Sec. Horse Yeo. (T.F.)); Beaumont, Lieut. E. E., 2nd Aircraft Park, 2nd Bde.; Bedwell, Maj. (A./Lieut.-Col.) J. R., M.C., 1st Balloon Wing (R.G.A.); Beeston, Lieut. (A./Capt.) H. C., 101st Sqdn. (6th Bn., Essex R. (T.F.)); Bell, Lieut. (A./Capt.) C. W. D., 101st Sqdn. (10th Hrs.); Bell, Lieut. J. R., 3rd Sqdn., Aust. F.C.; Bellamy, Lieut. (A./Capt.) H. G.; Bingham, Lieut. (A./Capt.) J. R.; Birkett, Lieut. W. S., 31st Balloon Sec.; Bissonnet, Lieut. C. A., 24th Sqdn.; Blackman, Sec. Lieut. and Hon. Capt. R. D., 10th Sqdn., 2nd Bde. (R.A.S.C.); Blair, Lieut. A.; Bowring, Lieut. (A./Capt.) W., M.B.E. (Sec. Rif.); Breen, Capt. J. J., H.Q. 10th Bde. (R. Ir. Regt.); Brindle, Lieut. P., 24th Sqdn.; Briscoe, Capt. (A./Maj.) E. J., O.B.E.; Brown, Sec. Lieut. (A./Capt.) R. F., 13th Sqdn.; Buchanan, Sec. Lieut. H. D., 108th Sqdn., 2nd Bde.; Bull, Sec. Lieut. C. H.; Burdett, Lieut.-Col. A. B., D.S.O., H.Q. 12th Wing; Burnay, Lieut. P. S., 3rd Sqdn.; Burt, Capt. W. L., M.B.E. (Essex R.); Bush, Sec. Lieut. H. W.; Butters, Sec. Lieut. G.

Cabellu, Lieut. (A./Capt.) A. H., H.Q. 2nd Wing, 2nd Bde.; Cairnes, Capt. (A./Lieut.-Col.) T. A. E., D.S.O., 22nd Wing (7th D. Gds.); Carter, Capt. A. W., D.S.C., 210th Sqdn.; Casey, Capt. C. I., M.C., H.Q. 11th Wing, 2nd Bde.; Chadwick, 2nd Lieut. C. H., 10th Sqdn., 2nd Bde.; Chamier, Lieut.-Col. J. A., C.M.G., O.B.E., D.S.O. (Ind. Army); Champagne, Sec. Lieut. E. O., 80th Sqdn.; Chapman, Lieut. H. E., 7th Sqdn., 2nd Bde.; Child, Capt. (A./Lieut.-Col.) A. J., O.B.E., M.C. (Lond. R.); Clare, Capt. S., M.B.E.; Clark, Maj. (A./Lieut.-Col.) A. J., O.B.E. (Lond. R.); Clarke, Maj. A. C., 60th Sqdn.; Clarke, Sec. Lieut. L. F.; Clemence, Sec. Lieut. S. H., 7th Sqdn., 2nd Bde.; Cochrane, Capt. (A./Maj.) J. A., M.C., 8th Balloon Coy., 2nd Bde.; Collins, Capt. (A./Maj.) E. E., Aust. F.C.; Colman, Lieut. L. H., 3rd Sqdn.; Common, Lieut. J. S., 206th Sqdn., 2nd Bde.; Compton, Capt. (A./Maj.) R. J. O., D.S.C., D.F.C.; Coote, Sec. Lieut. J. G., 84th Sqdn.; Copeland, Sec. Lieut. (A./Lieut.) H. T. H., H.Q. 22nd Wing; Corbitt, Sec. Lieut. (A./Capt.) A. J.; Cosway, Capt. (A./Maj.) L. H. B., O.B.E.; Crane, Lieut. F. D.; Crane, Lieut. K. H., 149th Sqdn., 2nd Bde.; Cray, Sec. Lieut. A. H., 70th Sqdn., 2nd Bde.; Crossman, Lieut. T. H., 2nd Sqdn.; Cullen, 2nd Lieut. C. E., 50th Sqdn.; Curtis, Lieut. G. A.

Dance, Lieut. (A./Capt.) F., M.B.E.; Darwin, Capt. (A./Maj.) C. J. W., D.S.O., 87th Sqdn. (C. Gds.); Dean, Maj. H. G., A.F.C. (Y. and L. Regt.); De Poix, Capt. (A./Maj.) R. B. C. M. T., O.B.E. (Norf. R.); Deremo, Sec. Lieut. J. C., D.F.C., 15th Sqdn.; Dickinson, Sec. Lieut. (A./Lieut.) F. A. (R.F.A.); Donald, Capt. R., M.B.E.; Done, Sec. Lieut. (A./Lieut.) J. S.; Driver, Lieut. E. T., 53rd Sqdn., 2nd Bde.; Drover, Lieut. (A./Capt.) D.; Dudley-Smith, Sec. Lieut. S. F., 13th Sqdn.; Duke, Sec. Lieut. R. M.; Dye, Lieut. (A./Capt.) A. H. (S.A. Native Lab. Corps); Dymant, Lieut. (A./Capt.) F. C. U., 15th Sqdn.

Edwards, Lieut. (A./Capt.) A. H.; English, Lieut. A. A., M.C., 101st Sqdn.; Evans, Capt. (A./Maj.) W. S., O.B.E., 3rd Bde. (Welsh R.); Everton, Lieut. (A./Capt.) W. B.

Faithfull, Maj. (A./Lieut.-Col.) G. F. H., O.B.E., 3rd Balloon Wing (Ind. Army); Fell, Lieut.-Col. L. F. R., O.B.E., D.S.O.; Fell, Sec. Lieut. R., 2nd Aircraft Park, 2nd Bde.; Fitzgerald, Sec. Lieut. J. H., 8th Sqdn.; Fitzgerald, Lieut. M. B., M.B.E.; Fitzherbert, Lieut. (A./Capt.) H. B.; Ford, Capt. (A./Maj.) H. G., O.B.E.; Forsyth, Sec. Lieut. (A./Capt.) M., 9th Sqdn.; Foster, Lieut. (A./Capt.) R. M., D.F.C. (R. Fus.); Frost, Capt. O. H., M.B.E., M.C. (Mdx. R.); Frankish, Lieut. (A./Capt.) J. R., M.B.E., H.Q. 2nd Bde.; Fry, Capt. A. A., M.B.E., H.Q. 12th Wing; Fryer, Sec. Lieut. D. J., 45th Sqdn.; Fussell, Sec. Lieut. (A./Lieut.) R. G., 4th Aircraft Park.

Gauld, Lieut. G. W. G., 74th Sqdn., 2nd Bde.; Godden, Capt. (A./Maj.) G. L., O.B.E.; Golding, Lieut. (A./Capt.) G. F., M.B.E., 3rd Bde.; Goldsmith, Lieut. (A./Capt.) St. B., M.C., H.Q., 3rd Bde.; Gooding, Lieut. C. R., 7th Sqdn., and Bde.; Gossage, Lieut.-Col. E. L., D.S.O., M.C. (R.A.); Graham, Sec. Lieut. J., D.F.C., 7th Sqdn., 2nd Bde. (6th Res. Regt. of Cav.); Grandi, Sec. Lieut. W. Z., 2nd Sqdn.; Grant, Sec. Lieut. W. W. W.; Greenwood, Maj. B. P., 149th Sqdn., 2nd Bde.; Groves, Sec. Lieut. C., 79th Sqdn., 2nd Bde.; Gyles, Lieut. W. W., 210th Sqdn.

Haldimand, Lieut. P. McK., 149th Sqdn., 2nd Bde.; Hall, Capt. (A./Maj.) W. W., O.B.E.; Hallawell, Lieut. C., 103rd Sqdn.; Harding, Lieut. F. L., 57th Sqdn.; Harnett, Capt. (A./Maj.) E. St. C., O.B.E., H.Q., 2nd Bde. (formerly R. Highrs.); Harper, Sec. Lieut. H. G., 35th Sqdn.; Harrison, Sec. Lieut. (A./Lieut.) A. H.; Harrison, Lieut. (A./Capt.) T. S., D.F.C., 29th Sqdn., 2nd Bde.; Hayward, Lieut. and Hon. Capt. W. C., D.C.M.; Hazell, Capt. T. F., D.S.O., M.C., D.F.C., 24th Sqdn.; Hebden, Lieut.-Col. S. A., O.B.E.; Heintzman, Sec. Lieut. and Hon. Lieut. H. C., 35th Sqdn.; Heppell, Sec. Lieut. and Hon. Lieut. J. B., 206th Sqdn., 2nd Bde.; Hewitt, Sec. Lieut. and Hon. Lieut. E. N., 9th Sqdn.; Hewitt, Lieut. (A./Capt.) H. S.; Hill,

Maj. G. D. (7th Hrs.); Hollis, Sec. Lieut. and Hon. Lieut. (A./Lieut.) D. L.; Holloway, Sec. Lieut. R. G.; Horlock, Sec. Lieut. and Hon. Lieut. A. G. (2/5th Bn., E. Kent R. (T.F.)); Horn, Capt. S. B., M.C., 85th Sqdn.; Horton, Sec. Lieut. (A./Lieut.) W. G.; Hoy, Lieut. (A./Capt.) E. C., D.F.C., 29th Sqdn., 2nd Bde.; Hudson, Lieut.-Col. H. C. H., M.V.O. (11th Hrs.); Hunter, Maj. H. J. F., M.C., 42nd Sqdn.; Hutchinson, Sec. Lieut. H., 7th Sqdn., 2nd Bde.; Huxley, Capt. (A./Maj.) W. S., M.C., 12th Balloon Coy.; Hynes, Lieut.-Col. G. B., D.S.O. (R.G.A.).

Ibbotson, Lieut. A., 59th Sqdn.; Ingpen, Capt. (A./Maj.) D. L.; Isitt, Lieut. F. H., 80th Sqdn.

James, Lieut. (A./Capt.) M. R., D.F.C., 45th Sqdn.; Jenkins, Sec. Lieut. T. P., 7th (Res.) Lorry Park, 2nd Bde.; Jillings, Capt. (A./Maj.) D. S., M.C. (W. York R.); Johnson, Lieut. A. H., 13th Balloon Coy.; Johnson, Sec. Lieut. and Hon. Lieut. C. G., 2nd Sqdn. (5th Bn., Rly. Troops, Can. Forces); Jones, Capt. A. W., 53rd Sqdn., 2nd Bde. (5th Bn., N. Lan. R. (T.F.)); Jones, Lieut. S., 149th Sqdn., 2nd Bde.; Jones, Sec. Lieut. W. T. (S.W. Bord.); Jupp, Maj. W. D. L., O.B.E.

Kavanagh, Capt. H. R., M.B.E., H.Q., 2nd Bde. (2nd Bn., R. Irish Fus.); Keele, Lieut. E. B., 13th Balloon Sec., 2nd Bde.; Keely, Lieut. (A./Capt.) R. P. (7th Bn., Lond. R.); Keith, Sec. Lieut. and Hon. Lieut. C.; King, Capt. R., D.S.O., D.F.C., 4th Sqdn., Aust. F.C.; Kitson, Lieut. G. G.; Knatchbull-Hugessen, Lieut. (A./Maj.) The Hon. M. H. R., M.C. (R.A.); Knight, Sec. Lieut. (A./Lieut.) J. M., M.B.E.; Knox, Capt. E. G., M.B.E., 5th Bde., Aust. F.C.; Knox, Sec. Lieut. and Hon. Maj. A. H. W. S. (N. Lan. R.).

Ladd, Lieut. and Hon. Capt. (A./Capt.) L. S., 79th Sqdn., 2nd Bde.; Lagasse, Lieut. (A. Capt.) C. H. R., D.F.C., 29th Sqdn., 2nd Bde.; Lale, Lieut. (T./Capt.) H. P., D.F.C.; Lamb, Lieut. S. E. C., 11th Balloon Coy.; Langridge, Lieut. and Hon. Capt. E. J., M.B.E. (N. Staff. R.); Law, Sec. Lieut. and Hon. Lieut. (A./Lieut.) R. A., H.Q., 15th Wing; Lawrence, Lieut. C. J. L., 21st Sqdn.; Lawson, Capt. H., M.B.E., 46th Sqdn.; Leurmound, Lieut. G. V., 20th Sqdn.; Le Blanc Smith, Capt. (A./Maj.) M., D.F.C., 73rd Sqdn.; Lee, Sec. Lieut. W., 102nd Sqdn.; Lee-Barber, Lieut. G. W.; Lewis, Lieut. A. T.; Linford, Lieut. R. D., 149th Sqdn., 2nd Bde.; Littlejohn, Sec. Lieut. C., M.M., H.Q., 13th Wing; Loder, Lieut. L. F., 2nd Sqdn., Aust. F.C.; Lord, Capt. C. G., M.C., H.Q., 81st Wing; Lough, Lieut. (A./Capt.) E. T.; Lovemore, Lieut. R. B., D.S.O., 29th Sqdn.

Macdonald, Lieut. (A./Capt.) C. B. R., 85th Sqdn. (R.E.); Mackay, Capt. D. R. G., D.F.C.; MacLaren, Lieut. (A./Capt.) D. R., D.S.O., M.C., D.F.C., 46th Sqdn.; Maclean, Lieut.-Col. C. T., D.S.O., M.C. (R. Scots); Maybury, Capt. (A./Maj.) H. P., O.B.E.; McBean, Lieut. R. E. L.; McClaghry, Capt. E. J., D.S.O., D.F.C., 4th Sqdn., Aust. F.C.; McClaghry, Maj. W. A., D.S.O., M.C., D.F.C., 4th Sqdn., Aust. F.C.; McDonald, 2nd Lieut. (A./Capt.) J. S., 208th Sqdn., 2nd Bde. (5th Bn., Sco. Rif.) (T.F.); McDougall, 2nd Lieut. N. M., 59th Sqdn.; McKenzie, Sec. Lieut. M. A., M.C., 20th Sqdn. (R.S. Fus.); Mellor, Sec. Lieut. J.; Miles, Maj. C. C., M.C., 43rd Sqdn., 2nd Bde.; Miller, Lieut. G. W., 9th Sqdn.; Miller-Tait, Sec. Lieut. R.; Mills, Sec. Lieut. A. S. H., 21st Sqdn.; Morris, Lieut. (A./Maj.) H. S., M.B.E., 5th Bde. (C. Gds. (S.R.)); Morrison, Capt. A., 11th Sqdn.

Neame, Maj. A. L. C., O.B.E. (R.E.); Nesbitt, Lieut. A. N.; Nesbitt, Lieut. (A./Capt.) T. H., M.B.E., H.Q., 15th Wing; Netherlands, Maj. M. H. B., D.S.O., 103rd Sqdn.; Nevatt, Capt. (A./Maj.) C. G., O.B.E.; Newton-Care, Capt. W. S., M.B.E.; Northcote, Sec. Lieut. T. F., 84th Sqdn.

Oliver, Lieut. C. K., 87th Sqdn.

Packham, Lieut. A. T., 20th Sqdn. (9th Bn., N. Staff. R.); Palmer, Maj. A. F.; Palmer, Sec. Lieut. H. H., 21st Sqdn.; Palmer, Lieut. (A./Capt.) J., 24th Sqdn.; Parr, Maj. A. W. C. V.; Payne, Lieut. (A./Capt.) L. A., M.C., 48th Sqdn., 2nd Bde.; Petch, Lieut. (A./Capt.) F. H.Q., 5th Bde.; Penny, Lieut. M. G., 206th Sqdn., 2nd Bde. (R.G.A.); Philcox, Lieut. (A. Capt.) W. S., 92nd Sqdn.; Phillips, Lieut. (A./Maj.) W. E.; Pizey, Lieut. R. D. G., D.F.C., 15th Sqdn.; Poole, Sec. Lieut. and Hon. Lieut. (A./Lieut.) C. J., H.Q., 11th Wing, 2nd Bde.; Porteous, Capt. (A./Maj.) H. B.; Porter, Lieut. (A./Capt.) E. E., M.B.E., D.C.M., 4th Aircraft Park (Shrops. L.I.); Prendergast, Lieut. (A./Capt.) D. A. J., 18th Balloon Coy.; Proberts, Sec. Lieut. (A./Capt.) C. W.; Purdy, Lieut. (A./Capt.) T. D. S., H.Q., 80th Wing; Purefoy, Lieut. J. B., 12th Sqdn.; Pyper, Lieut. (A./Capt.) H. C. (Lan. Fus.).

Ramsay, Sec. Lieut. R., 206th Sqdn., 2nd Bde.; Rayner, Lieut. (A./Capt.) J. W., 60th Sqdn.; Riddell, Lieut. P. C. O. (Wilts. R.); Robb, Sec. Lieut. A. R., 8th Sqdn.; Roberts, Lieut. S. H., 14th Balloon Coy.; Robinson, Sec. Lieut. and Hon. Lieut. W. P. A., M.C. (R.F.A.); Rodwell, Maj. J. T., O.B.E., 9th Sqdn.; Rogers, Sec. Lieut. (A./Capt.) B.; Rook, Lieut. B. H., 206th Sqdn., 2nd Bde.; 'Ross, Lieut. (A./Capt.) A. J. M., M.B.E.; Ross, Lieut. (A./Capt.) C. G., D.F.C., 29th Sqdn., 2nd Bde.; Royse, Lieut. R. T.; Russell, Capt. C. E. S., 149th Sqdn., 2nd Bde.; Russell, Maj. J. C., D.S.O. (R.E., T.F.); Russell, Sec. Lieut. J. D., 206th Sqdn., 2nd Bde.; Ryan, Lieut. and Hon. Capt. M. K. (Alberta R., Can. Forces).

St. John, Capt. R. G., D.S.C., 206th Sqdn., 2nd Bde.; Sawyer, Lieut. H. G.; Sehl, Lieut. F. T. S., 201st Sqdn.; Shelswell, Sec. Lieut. C. O., 206th Sqdn., 2nd Bde.; Shields, Lieut. (A./Capt.) W. E., D.F.C., 41st Sqdn., 2nd Bde.; Simpson, Sec. Lieut. (A./Lieut.) A. H.; Small, Lieut.-Col. R. G. D. (Leins. R.); Smith, Capt. A. C.; Smith, Maj. F. W.; Smith, Capt. (A./Maj.) W. E., O.B.E.; Snowden, Sec. Lieut. W. C., 21st Sqdn.; South, Lieut. W. B.; Spencer, Lieut. R. A., 59th Sqdn.; Stansfield, Capt. (A./Maj.) H., M.B.E.; Stapleton-Cotton, Maj. (A./Lieut.-Col.) R. F.; Stevens, Capt. (A./Maj.) G., O.B.E.; Stevenson, Capt. (A./Maj.) D. F., D.S.O., M.C., 35th Sqdn. (Notts. Hrs. (T.F.)); Stewart, Sec. Lieut. and Hon. Lieut. D. W. (W. Ontario R., Can. Forces); Stone, Lieut. C. O., 2nd Sqdn., Aust. F.C.; Stradling, Capt. (A./Maj.) A. H., O.B.E. (5th Bn., Gord. Highrs. (T.F.)); Strange, Lieut.-Col. L. A., D.S.O., M.C., D.F.C., H.Q., 80th Wing (Dorset R.); Stringer, Maj. (A./Lieut.-Col.) C. H., H.Q., 8th Balloon Wing; Swan, Sec. Lieut. (A./Lieut.) R., M.B.E., 3rd Aircraft Park; Swoffer, Lieut. (A./Capt.) F. A., M.B.E., H.Q., 5th Bde. (7th Bn., Mdx. R. (T.F.)); Sydenham, Sec. Lieut. T.

Taplin, Lieut. B.; Taylor, Sec. Lieut. E. J., 23rd Sqdn.; Taylor, Sec. Lieut. J. H.; Thomas, Sec. Lieut. C. E., 23rd Sqdn.; Thomas, Lieut. F. A., 35th Sqdn.; Thomas, Lieut. G. F.; Toogood, Lieut. C. F., 12th Sqdn.; Trafford, Lieut. (A./Capt.) C. E. J., M.C. (1st Bn., S. Gds.); Trites, Sec. Lieut. S. B., 8th Sqdn.; Trout, Sec. Lieut. (A./Capt.) R. R.; Tuck, Sec. Lieut. R.; Turner, Capt. N.

Vigers, Lieut. (A./Capt.) A. W., M.C., D.F.C., 87th Sqdn.

Warnford Davis, Sec. Lieut. (A./Lieut.) D.; Watney, Sec. Lieut. and Hon. Lieut. M. A., 21st Sqdn. (R.A.S.C.); Watson, Lieut. (A./Capt.) A. M., M.B.E. (Shrops. L.I.); Watson, Sec. Lieut. R. A.; Watson, Lieut. W. C.; Webb, Lieut. (A./Capt.) J. S.; Williams, Lieut. (A./Capt.) G. A., M.B.E., 3rd Bde.; Wilson, Lieut. (A./Capt.) A. McC., M.B.E., 5th Balloon Wing (H.L.I.); Winch, Sec. Lieut. C. A., 149th Sqdn., 2nd Bde. (R. Bde.); Worswick, Maj. T., O.B.E.

Amey, 628 S.M. R. W., 2nd Sqdn.; Andrews, 16470 Ldg. Aircraftman W., 1st Bde.; Ashton, 44970 1st Aircraftman S. E., 11th Balloon Coy.; Auld, 20609 Flt. Sergt. A., 48th Sqdn.; Avens, 8160 Flt. Sergt. B., H.Q., 3rd Bde. Bachshall, 6996 1st Clk. J., H.Q., 11th Wing, 2nd Bde.; Ball, 204013 Flt. Sergt. H. J.; Barker, 22298 Clk. F. J. J., 1st Bde.; Barnard, 21478 Clk. W. C. P.; Barnes, 26021 Ldg. Aircraftman C. L.; Barnes, 2326 Ldg. Aircraftman P. R., 3rd Bde.; Beattie, 1078 Flt. Sergt. H. H., 2nd Sqdn., Aust.

F. C.; Beecroft, 83044 1st Aircraftman R.; Bell, 15763 Flt. Sergt. W., 49th Sqdn.; Bethell, 348 S.M. H. E.; Biddle, 26428 Cpl. Mech. B. C., 70th Sqdn., 2nd Bde.; Billing, 232 S.M. B., 20th Sqdn. (died); Blackwell, 51670 Sergt. G. W., 12th Balloon Sec.; Blanchard, 33945 Ldg. Aircraftman P., 3rd Aircraft Park; Bletcher, 48618 Ldg. Aircraftman (A./Cpl.) E. E., H.Q., 2nd Bde.; Bonner, 5913 Chief Mech. F. E., 29th Sqdn., 2nd Bde.; Booker, 24716 1st Aircraftman H. H.; Boorman, 4495 Cpl. P. T., H.Q., 2nd Wing, 2nd Bde.; Bound, 1471 Flt. Sergt. F., 48th Sqdn.; Branch, 20049 Sergt. E. R.; Bray, 3990 Sergt. E. G., 6th Sqdn.; Broadley, 402673 S.M. A. E., D.C.M., 7th Sqdn., 2nd Bde.; Brookes, 53844 Ldg. Aircraftman J., H.Q., 13th Wing; Brown, 16308 Flt. Sergt. T. W. A., 2nd Aircraft Park, 2nd Bde.; Bunting, 29624 Sergt. (A./Flt. Sergt.) R. S.; Burdge, 18222 Master Mech. F. J., H.Q., 11th Wing; Butler, 37658 Sergt. T. E.

Campbell, 25327 1st Aircraftman B. T., H.Q., 2nd Bde.; Carter, 2768 Sergt. G.; Cheffings, 34167 Sergt. R. E., 3rd Aircraft Park; Clark, 76986 Ldg. Aircraftman (A./Cpl.) E. S.; Clark, 59839 Cpl. H., H.Q., 13th Wing; Clary, 23005 Flt. Sergt. J. A., 48th Sqdn.; Clay, 1870 Flt. Sergt. S., 149th sqdn. (now 20th Sqdn.); Close, 29178 Flt. Sergt. H. D., H.Q., 5th Bde. (now 208th Sqdn.); Cobner, 24115 2nd Aircraftman E. J.; Cockayne, 13804 Cpl. A., 2nd Sqdn.; Cocks, 121103 Ldg. Aircraftman R., H.Q., 2nd Wing; Connor, 21277 Sergt. J., 5th Balloon Wing; Coppstone, 1484 S.M. A. J., 1st Sqdn.; Cottam, 26360 Cpl. W. A., H.Q., 11th Wing; Coudurier, 18376 Sergt. Clk. L.; Cox, 2302 S.M. A. R., 56th Sqdn.; Crisp, 18744 Flt. Sergt. J. C.; Crokam, 28365 1st Aircraftman A. J. S., H.Q., 3rd Bde.; Cullen, 7075 Ldg. Aircraftman (A./Cpl.) S. T., 13th Sqdn.; Culley, 59924 Cpl. F., H.Q., 2nd Wing.

Dakeyne, 1064 Cpl. W., 3rd Balloon Wing; Dandy, 6629 Sergt. W. R.; Darling, 11041 Ldg. Aircraftman H. S., H.Q., 15th Wing; Davies, 26748 1st Aircraftman (A./Cpl.) F. L., H.Q., 5th Bde.; Denby, 26274 Flt. Sergt. S. G.; Dickinson, 37840 Cpl. (A./Sergt.) F., H.Q., 9th Bde.; Didcot, 16466 Ldg. Aircraftman A. G., H.Q., 15th Wing; Dixon, 49532 S.M. G.; Dixon, 4695 Flt. Sergt. J.; Dolding, 19705 Flt. Sergt. A. R., 53rd Sqdn. (now 18th Sqdn.); Dorey, 221723 2nd Aircraftman C. E., 2nd Bde.; Drake, 35100 Sergt. J. M., 7th Sqdn.

Dupree, 402960 Ldg. Aircraftman A. G., 3rd (Res.) Lorry Park.

Eland, 114785 Sergt. J. W., Aero. Service Unit; Elcoate, 22323 Sergt. E., 13th Sqdn.; Ellis, 14141 Flt. Sergt. W. A., 103rd Sqdn.; Evans, 221471 Ldg. Aircraftman T. H. E.

Fenwick, 10242 Sergt. R. W., 16th Sqdn.; Field, 27212 1st Aircraftman A. H., 59th Sqdn.; Figg, 10797 Chief Mech. A., 29th Sqdn., 2nd Bde.; Finch, 200599 S.M. S. P., 3rd Sqdn.; Fry, 4488 Flt. Sergt. J., 2nd Sqdn.; Fuller, 224021 Sergt. (A./Flt. Sergt.) A. N., 208th Sqdn.

Giles, 50232 Ldg. Aircraftman A., 4th Aircraft Park; Good, 17376 Flt. Sergt. J. A., 85th Sqdn. (now 80th Wing); Gray, 17367 Flt. Sergt. F. H.; Gurney, 13440 Cpl. C. V.; Guthrie, 2355 S.M. S. J., 59th Sqdn.

Hackett, 139633 1st Aircraftman D., 2nd Aircraft Park; Haines, 6200 Sergt. G. T., 24th Sqdn. (now 92nd Sqdn.); Hallchurch, 8345 S.M. T. W., 102nd Sqdn.; Hanson, 9324 Cpl. A. W., 3rd Bde.; Harding, 17344 Ldg. Aircraftman E. H., H.Q., 13th Wing; Hastie, 134699 Sergt. H.; Hawes, 2921 Flt. Sergt. W. M.; Hearne, 85107 Ldg. Aircraftman H. A., 5th Balloon Wing; Heathfield, 48516 Sergt. R. C., 35th Sqdn.; Hedges, 10104 S.M. A. H., 62nd Sqdn.; Hemming, 6972 Ldg. Aircraftman J. W., 35th Sqdn.; Hennah, 15947 Ldg. Aircraftman (A./Cpl.) J. C., H.Q., 12th Wing; Hick, 114383 Ldg. Aircraftman (A./Cpl.) T.; Hinbury, 16804 Flt. Sergt. J. W., 7th (Res.) Lorry Park, 2nd Bde.; Hockley, 29924 Sergt. (A./Flt. Sergt.) W. A., 4th Aircraft Park; Hodges, 11847 Chief Master Mech. L. G., 70th Sqdn., 2nd Bde.; Hornbrook, 1500 Flt. Sergt. F.; Howie, 25916 Sergt. J.; Hurd, 3639 Flt. Sergt. C. F., 5th Sqdn.

Inch, 17394 Ldg. Aircraftman G., 7th Sqdn.; Inglis, 6771 S.M. J.

Jewry, 12409B Ldg. Aircraftman (A./Cpl.) J. R., 5th Balloon Wing; Jones, 2439 Sergt. T., 48th Sqdn.

Kennedy, 22342 Cpl. E., H.Q., 3rd Bde.; Kimber, 4770 Ldg. Aircraftman G., 7th Sqdn.; King, 134804 Flt. Sergt. W.; Kinnear, 403172 1st Aircraftman G.; Knapp, 1470 Flt. Sergt. J. J., 3rd Sqdn., Aust. F.C.; Knight, 3120 Flt. Sergt. F. G., 8th Sqdn.; Knowles, 2045 Chief Mech. J. W., 41st Sqdn., 2nd Bde.; Krauterkraft, 40768 Ldg. Aircraftman (A./Cpl.) L., 1st Bde.

Lambert, 16928 S.M. A. H., H.Q., 2nd Wing; Lamerton, 15092 Flt. Sergt. H., 35th Sqdn. (now 4th Wing); Lang, 69386 Ldg. Aircraftman C. S., H.Q., 9th Bde.; Langley, 90776 Ldg. Aircraftman S., Junr.; Langridge, 15357 Cpl. R. A., 79th Sqdn.; Latham, 7157 Flt. Sergt. C. J., 149th Sqdn. (now 79th Sqdn.); Latham, 39656 Ldg. Aircraftman R., 1st Balloon Sec.; Lawrence, 86022 Ldg. Aircraftman (A./Cpl.) H. J.; Lawson, 1506 Cpl. (A./Sergt.) J. A.; Levett, 17310 1st Aircraftman T.; Lewin, 17171 Sergt. A. G., 79th Sqdn.; Loder, 223944 1st Aircraftman C. A., H.Q., 13th Wing; Lovelock, 6533 Sergt. H.; Lowman, 24751 Ldg. Aircraftman W. H., 12th Balloon Sec.; Lynch, 17798 Ldg. Aircraftman F., 7th Sqdn.

Macklin, 13174 Flt. Sergt. D. J., 35th Sqdn.; Marshall, 64559 1st Aircraftman B. J., 79th Sqdn.; Martin, 252 S.M. D., M.M. (died); Mase, 92806 Cpl. T. F.; Matthews, 15119 Sergt. S., 5th Balloon Wing; Maxwell, 15849 Flt. Sergt. A.; McHardy, 114359 1st Aircraftman C. H., 59th Sqdn.; McRae, 3258 S.M. G., 46th Sqdn.; Michell, 7892 Sergt. C. R., 7th Sqdn.; Miles, 11063 Cpl. (A./Sergt.) A. H., 12th Balloon Coy.; Mills, 29559 Sergt. J. F., 88th Sqdn.; Montague, 31905 1st Aircraftman G. J., 3rd Aircraft Park; Moore, 18867 Sergt. (A./Flt. Sergt.) A.; Moore, 59521 1st Aircraftman E., 15th Sqdn.; Moore, 267812 2nd Aircraftman F.; Moorish, 238943 Ldg. Aircraftman G. C., Aero. Constr. Unit.

Newey, 64483 1st Aircraftman J.; Newnham, 11456 1st Aircraftman W. A.; Norris, 35155 Cpl. C.; Nunn, 1950 Flt. Sergt. C., 57th Sqdn.

O'Connor, 1085 S.M. M., 41st Sqdn., 2nd Bde (now 20th Sqdn.); Owers, 21037 Flt. Sergt. E. A., 101st Sqdn.

Parker, 37284 Cpl. S.; Parsley, 75605 Sergt. C. G., H.Q., 80th Wing (now H.Q., 10th Wing); Parsons, 25888 Cpl. W. G., 12th Balloon Sec.; Pears, 145206 1st Aircraftman E. R.; Pearson, 48007 Ldg. Aircraftman (A./Cpl.) T.; Peasland, 32845 Ldg. Aircraftman (T./Sergt.) R. H.; Peck, 8175 Flt. Sergt. E. R.; Pegg, 15582 Cpl. H. M., 5th Balloon Wing; Phillips, 75732 Ldg. Aircraftman (A./Cpl.) H. K., H.Q., 12th Balloon Sec. (now 216th Sqdn.); Poll, 69063 Sergt. (A./Flt. Sergt.) W.; Pollard, 12572 Flt. Sergt. T., 59th Sqdn.; Powell, 39800 Sergt. H. H., 148th Sqdn.; Purchase, 9055 Flt. Sergt. S. J., 54th Sqdn. (now 80th Wing); Preshous, 60149 Ldg. Aircraftman (A./Cpl.) H.; Pye, 17409 1st Aircraftman L. S., H.Q., 12th Wing (now 12th Sqdn.); Pyle, 11995 Flt. Sergt. W. N.

Reed, 1996 Flt. Sergt. C. S., 43rd Sqdn.; Rees, 15636 1st Aircraftman R. T., 13th Sqdn. (now 12th Wing); Reeves, 203123 Flt. Sergt. W. C., 12th Wing; Reid, 103492 1st Aircraftman E.; Rendall, 27714 Ldg. Aircraftman A. R.; Robertshaw, 402962 Sergt. C., 84th Sqdn.; Robinson, 69297 Ldg. Aircraftman W. G.; Roche, 45518 1st Aircraftman J., 79th Sqdn.; Rowley, 203886 Flt. Sergt. J. G., 210th Sqdn.; Ryan, 98332 Cpl. C. P.

Sayers, 10666 Cpl. J., H.Q., 2nd Wing; Scott, 1184 Flt. Sergt. A., 10th Sqdn.; Shaw, 13606 Chief Mech. W., 29th Sqdn., 2nd Bde.; Smith, 134537 Flt. Sergt. C.; Smith, 674 Ldg. Aircraftman (A./Cpl.) J.; Smith, 7278 Ldg. Aircraftman J. H., H.Q., 2nd Bde.; Spencer, 53232 2nd A.M. C. R., 70th Sqdn., 2nd Bde.; Spillet, 6307 Sergt. E. F., H.Q., 13th Wing; Springthorpe, 10782 Ldg. Aircraftman R., 3rd Balloon Wing; Stokes, 23805 Cpl. A., 46th Sqdn. (now 48th Sqdn.); Stratford, 6199 Flt. Sergt. H. W., 107th Sqdn.;

Stroud, 7916 Flt. Sergt. F. W., 1st Balloon Sec.; Strudwick, 18701 Sergt. C.; Sweetman, 27972 Ldg. Aircraftman A. W.; Swindells, 14005 Sergt. (A./Flt. Sergt.) A. J., 101st Sqdn.
Tackley, 27561 Cpl. (A./Sergt.) G. H., 19th Balloon Coy.; Tickner, 28196 Cpl. C. W., H.Q., 5th Balloon Wing; Tiffen, 2596 Sergt. E. G.; Twist, 7595 Cpl. C. M., H.Q., 12th Wing; Tyler, 223761 Flt. Sergt. H. F. G. W., 210th Sqdn.
Vale, 27952 Sergt. J. A.; Veale, 26749 Ldg. Aircraftman R.; Vince, 218150 1st Aircraftman W. E.; Voisey, 568 Flt. Sergt. F. A. C.
Wade, 12425 Flt. Sergt. E. S., 2nd Aircraft Park; Wall, 18361 Flt. Sergt. S. W.; Warshawski, 22868 Cpl. W., 3rd Aircraft Park; Watson, 264270 2nd Aircraftman (A./Cpl.) G. E., 19th (Res.) Lorry Park; Webber, 227160

Ldg. Aircraftman G.; Welch, 6096 Ldg. Aircraftman (A./Cpl.) L. A., H.Q., 5th Bde.; Wharton, 2320 S.M. J., 92nd Sqdn.; Whiley, 59061 1st Aircraftman H.; Whitaker, 16918 Ldg. Aircraftman S., 6th Sqdn.; White, 109307 1st Aircraftman A.; White, 22987 Cpl. C. W., 2nd Bde.; Wigglesworth, 9408 Flt. Sergt. A., 102nd Sqdn.; Wilkie, 109883 1st Aircraftman J., 2nd Bde.; Williams, 17207 Flt. Sergt. A. F., 10th Sqdn.; Willment, 27083 Ldg. Aircraftman J. A.; Wilson, 19815 Ldg. Aircraftman E.; Wilson, 3827 Flt. Sergt. J. R., 6th Sqdn.; Wilson, 26945 Flt. Sergt. W., 54th Sqdn.; Wilson, 24781 Flt. Sergt. W. H., 48th Sqdn.; Winslade, 10725 Cpl. (A./Sergt.) A. E.; Wood, 8263 Cpl. J.; Woods, 8403 Chief Master Mech. J. W., 29th Sqdn., 2nd Bde.; Wort, 30229 Sergt. H.; Wright, 22823 Sergt. W. H.
Zachau, 48617 Ldg. Aircraftman J.F.



AVIATION IN PARLIAMENT

R.A.F. Upavon Camp, Wilts

Colonel BURN, on July 15, asked if the young men who enlisted in the R.A.F. and are now stationed at Upavon Camp, Wilts, are being put through a thorough course of training to make them thoroughly efficient?

The Under-Secretary of State for Air (Major-General Seely): I presume that my hon. and gallant friend is referring to the officers now quartered at the Central Flying School, Upavon. They are there awaiting passages to the various Dominions.

Colonel BURN: Are the men who enlisted in the Royal Flying Corps or the R.A.F. being usefully employed and instructed in their duties, or are they only doing fatigue duty in the camp?

Major-General Seely: I was there the other day, and I think everything is being done that could be done in that regard. If the hon. and gallant gentleman wishes to bring forward a particular point I shall be glad to deal with it.

Didsbury Aerodrome

Major NALL asked the Under-Secretary of State to the Air Ministry whether the Whalley Range Cricket Club premises at Didsbury, Manchester, which were taken possession of for military aviation purposes in 1917, are now being used by a company for civilian flying; and whether he will restore these premises to their rightful owners now that they are no longer required for military aviation?

Major-General Seely: The Didsbury Aerodrome will be required for R.A.F. purposes until November, 30, 1919, and has been made available for civilian flying since May 1. The future use of this and similar aerodromes is receiving careful consideration.

Aeroplane Contracts

MAJ. GLYN asked the Under-Secretary of State to the Air Ministry what is the policy of the Air Ministry in regard to either the giving or withholding orders to those small aeroplane manufacturing establishments that are associated with foreign aeroplane companies; whether he is aware that many of these smaller concerns are in an indifferent financial position and are only being kept going in a small way in the hope of later on obtaining a Government contract; and whether it is more in the public interest that these buildings should be used for other purposes whenever definite orders to obtain possession of these factories have been made?

Mr. Kellaway: I have been asked to answer this question. I do not quite understand this question, but I may say that the supplies of aeroplanes, contracted for under War conditions, are, and will be for some time to come, sufficient to meet the requirements of the Royal Air Force, without placing further contracts. The use to which the private factories are put is a matter entirely for the owners of the factories.

Flying-Boat Services

LIEUT.-CMDR. KENWORTHY asked the Under-Secretary of State to the Air Ministry whether it is intended to establish a regular service by flying-boat between the North-East Coast of England and Northern Europe; and, if so, under what conditions?

The Under-Secretary of State for Air (Maj.-Gen. Seely): It is not intended to run a Government service between the East Coast of England and Northern Europe. Those flights which have been and are being undertaken are to demonstrate the possibility of such flights and to gain experience.

Lieut.-Comdr. Kenworthy: Will encouragement be given to private enterprise to establish some such service?

Maj.-Gen. Seely: Oh, yes, Sir. Every encouragement that can properly be given will be given. There is no doubt a great future for flying-boats, especially to these countries.

Capt. Benn: Are any negotiations going on with the Post Office towards setting up an aerial mail?

Maj.-Gen. Seely: Perhaps it would be better to put a question to the Postmaster-General on that point. In regard to flying-boats no actual proposals are now before me, but any such proposals will receive careful consideration.

Lieut.-Comdr. Kenworthy: Have any negotiations taken place with Northern neutral countries, with a view to joint action in establishing such services or assisting them by private enterprise in the matter?

Maj.-Gen. Seely: That is rather a large question. Perhaps the hon. and gallant gentleman would put down a question on that specific point.

Amsterdam Exhibition

Captain W. BENN asked the Under-Secretary of State to the Air Ministry what firms have received from the Air Ministry permission to exhibit machines and engines made under Government contract at the Amsterdam Exhibition?

Major-General Seely: The following firms have received Air Ministry permission to exhibit machines at the Amsterdam Exhibitions:—Gosport Aircraft Company, F. 5, flying boat.

Messrs. Handley Page, V. 1500.

The Aircraft Manufacturing Company, D.H.X.A.

Admiralty and Airships

In the debate in the House of Commons on July 24 on the Navy Estimates, Mr. G. Lambert said: There is one point which has been alluded to here by Capt. W. Benn, and that is the question of the air. Is the Navy to have its own air service, or is it to be placed under the Air Ministry? I think the Air Ministry, if it is under the War Office, will have considerable difficulty in persuading the Admiralty that the air service of the Navy should be under the War Office. Possibly a little later on my right hon. friend may be able to give us some information.

Mr. Long: It is not settled yet.

Mr. Lambert: I assume it will be settled when the right hon. gentleman next presents his Estimates to us.

Lieut.-Commander Kenworthy urged that the Naval Staff College should be at Camberley in easy and close touch with the Army and Air Force colleges. He went on: The question of airships concerns the Admiralty, and I should like to ask the First Lord to give pause before he proceeds to relate the programme of airship building. These airships cost £350,000 each, and there are great sheds which will be of doubtful value in the future. The reason is that aeroplanes and seaplanes are advancing in efficiency so rapidly

that an airship will have about as much chance with the aeroplane as a sailing ship has to-day with a cruiser. The analogy is this—that the sailing ship was useful for a certain time, and then it became obsolete, and this is the same as the airship, which, I believe, will be dead in spite of a non-inflammable gas or any other improvements. Therefore I do beg the right hon. gentleman not to spend too much money on airship building programmes. The money should be spent rather on aeroplanes. There is little enough money, and it should be laid out to the best advantage. I do not think of the airships from the military point of view. People keen on airships are naturally keen on their weapons, but unfortunately the Admiralty is responsible for airships, and the Air Minister for aeroplanes, and therefore the airship schools have an unfair pull in the councils of the war. The First Lord should weigh up these points and consult with all the branches of the sea service—particularly the Navy—with regard to which is the best investment for the country's money. I throw this out as a helpful suggestion.

Capt. Wedgwood Benn: I desire to raise a somewhat large question of policy relating to the construction of airships. At the present time there is a programme of airships. There are six big airships built at a total cost of over £2,000,000. These are being built by the Admiralty, and under the control of the Board of Admiralty. They are being manned, my right hon. friend thinks, by the Admiralty personnel. The contention of those who have had any experience of the Air Service of all parties—for, of course, this is not in the slightest sense a party matter, and they are unanimous in this matter—is that everything that flies in the air should be under one control. This is a fundamental principle, both as regards construction, manning and operations. What is the reason? The right hon. gentleman says that everybody is agreed.

Mr. Long dissented.

Capt. Benn: Then the right hon. gentleman says everybody is not agreed. One of the great mistakes made by the first Coalition Government was that they did not unify the Air Service in 1915, or we should have had the Germans beaten in the air much sooner than we did. Why is it absolutely essential that you should not have two departments of the Government both constructing Air parts? The reason is perfectly obvious. The department over which the right hon. gentleman presides, in the olden days, used to go into the market and compete for the same engine with the department presided over by the Secretary of State for War. Is it not ridiculous that you should have two departments of the same customer competing for one article?

I lay it down that the unanimous opinion of all those competent to form an opinion is that everything that flies in the air should be under one control. I understood that that was the policy of the Government. If it is not the policy of the Government perhaps the right hon. gentleman will say so.

With regard to the use of these things even for war, you should have a unified control, and in regard to the manufacture and use of airships it is absurd that there should be division of control. I have been speaking of these machines as war weapons. If you are spending £2,000,000 upon airships of this kind for war purposes, I think that is a policy which the Committee should never sanction.

Now I turn to a really much more important side of the question, which is the civilian use of this craft. Everybody knows that the airship possesses certain great advantages over the aeroplane. It possesses much greater endurance and a much greater lifting power. It can stop easily, after its speed, and all these qualities give it very great advantages. It can be navigated in bad weather, and can grope its way to its moorings, while under similar conditions the aeroplane is in constant danger. For these reasons the airship has got a very great commercial future. There is no doubt that there is a big commercial future for the airships which can contribute very materially to an advance in aviation, although in its capacity as a war weapon it is of no great importance. Nevertheless, as a means of testing the atmosphere and making experiments in the way of aerial navigation, there is no doubt that the airship has got a very great future before it.

I imagine I am right in saying that there is no collated information about the atmospheric conditions which make for the success or otherwise of the Atlantic flight. It is to the airship that we must look for giving us information of that kind, and for giving the necessary data for the Meteorological Department of the Air Ministry. But the airship is under the control of the right hon. gentleman and has nothing to do with the Ministry. What should be done by the Air Ministry with a unified control should be to make experimental flights over the routes which perhaps are destined to become the postal routes of the world. If you have the airships and the aeroplanes under one control, you may hope to make some advance, but if you have them under separate controls you cannot hope to do so.

Lieut.-Colonel Moore-Brabazon: I want to say a word with regard to airships in general. We have come rather to the parting of the ways. The only possibility of any future for the airship from the military point of view is the substitution of one of the inert gases for the present highly inflammable gas, but that is a very difficult and expensive matter. We must remember now that aviation is to be found to be of use to this Empire, and I am serving on a Committee which is to see in what way we can help to link up our various Dominions by air service. Over long routes there is no doubt the airship will compare favourably with big aeroplanes in view of the enormous loads they can carry.

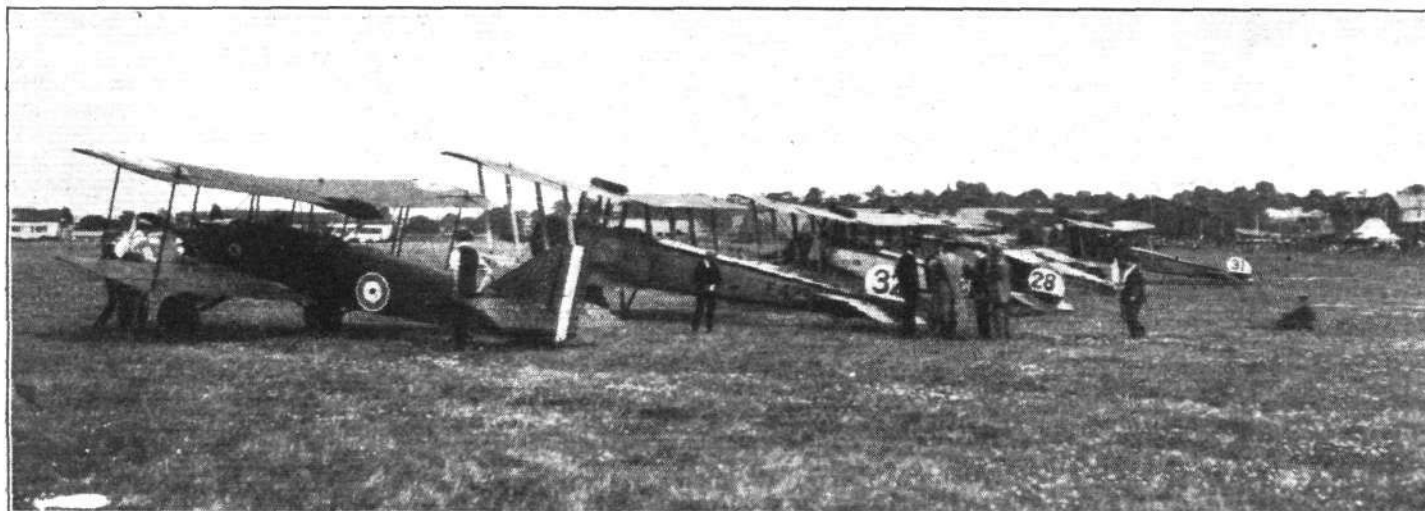
I wish to ask the right hon. gentleman two questions: The first is, whether he has any news as to the allocation to Great Britain of the big Zeppelins made in Germany that have been surrendered to the Allies. My second question is as to the policy to be taken by the Government with regard to airships in future.

Dr. Macnamara: On this question of airship policy I do not pretend to be able to speak with anything like practical knowledge, but for the moment, at any rate, the responsibility of the Admiralty for aviation is confined to the construction and maintenance, including repairs, of such rigid and non-rigid airships and airship stations as the Naval Staff desire for war services. The Director of Air Division looks after the requirements of the Navy, and maintains the necessary relations with the Grand Fleet, the Senior Naval Officers of Bases, the Air Council and the Admiralty Departments concerned. That is, for the moment, the shortest possible statement which I can make.

FLYING AT HENDON

THERE was a little better attendance at the London Aerodrome, Hendon, on Saturday afternoon, the occasion of the July Meeting. The event of the day was a 20-mile cross-country race over the usual course between the aerodrome and Bittacy Hill. The race consisted of five laps of this

the aerodrome to the public, this was, perhaps, the most interesting yet seen. It was certainly the most spectacular, for on the last lap Carr, who had hitherto been quite a respectable distance behind Draper who was leading on the Baboon, came on considerably and looked like winning the race.



"Flight" Copyright.

STARTERS IN HENDON'S AIR RACE ON SATURDAY: Left to right—B.A.T., piloted by Major Draper (winner); Avro, pilot Capt. D. H. Robertson, A.F.C.; Avro, pilot Major R. H. Carr, A.F.C., D.C.M. (second); G.-W. Bantam, pilot Capt. P. R. T. Chamberlayne (third); and Avro, pilot Lieut. G. R. Hicks, D.F.C.

course, and at 4 o'clock the following starters lined up. Their handicap allowance is shown :—

Capt. P. R. T. Chamberlayne, G.-W. Bantam, 80 Le Rhone, scratch.

Maj. Draper, B.A.T. Baboon, 170 A.B.C., 37 secs.

Capt. D. H. Robertson, Avro, 110 Le Rhone, 47 secs.

Maj. R. H. Carr, Avro, 110 Le Rhone, 56 secs.

Lieut. G. R. Hicks, Avro, 110 Le Rhone, 1 min. 6 secs.

Lieut. R. E. Duke and Capt. H. A. Hamersley were non-starters.

Of the short races held at Hendon since the re-opening of

Draper had, however, just sufficient in hand to enable him to pass the finishing line first, and the result was as follows :—

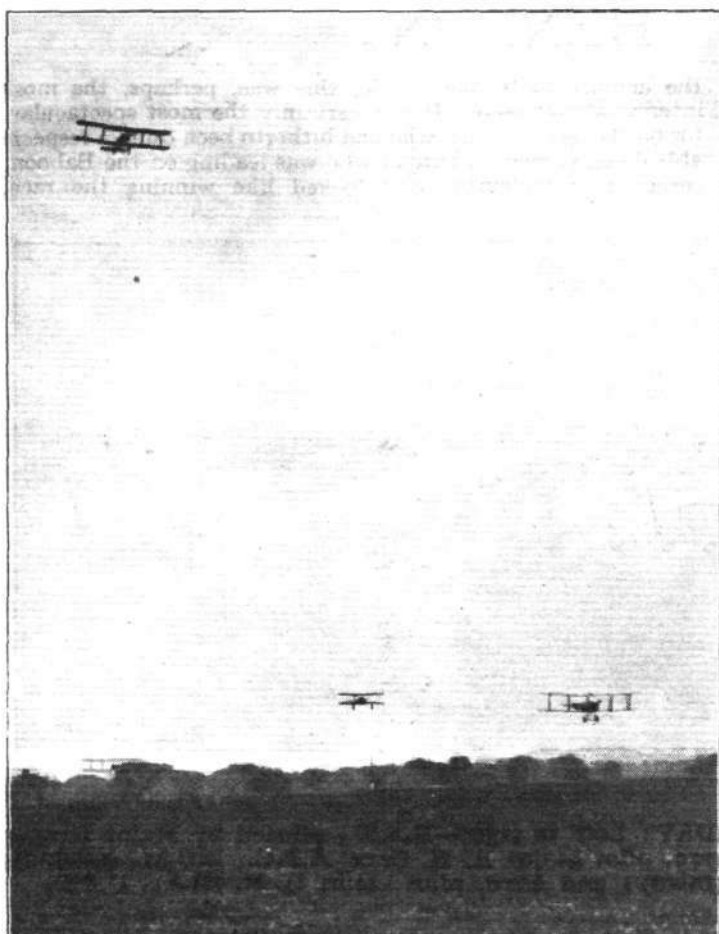
Handicap time			Handicap time		
		m. s.			m. s.
Draper ..	..	15 41	Hicks ..	..	15 52
Carr ..	..	15 42	Robertson ..	..	16 11
Chamberlayne ..	..	15 46			

Draper undoubtedly won the race through skilful flying, his performance being very creditable from the moment he left the ground until he descended. He wasted no time



"Flight" Copyright.

The five pilots in Saturday's race at Hendon : Left to right—Capt. Robertson, A.F.C., Maj. Draper, Capt. Chamberlayne, Maj. R. H. Carr, A.F.C., D.C.M., and Lieut. G. R. Hicks, D.F.C.



"Flight" Copyright

A bunch of four in the third lap in the race at Hendon on Saturday.

in turning or in getting any height, flying as he did very low over the whole of the course.

The first prize was the Hendon Trophy and the London Aerodrome Prize of £20, and the second prize was the London Aerodrome medal and prize of £10.

It was very gratifying to see that the demand for passenger flights was considerable, the enclosure next the flight booking office being practically filled with folk eager for their guinea trips. On Sunday this demand was continued, and all the Grahame-White machines were kept busy until late in the evening.

Prince Albert at Crayford

ON July 23 Prince Albert paid a visit to Crayford in order to re-open the Princess' Theatre in connection with Vickers' works. In the reconstruction of the theatre, which was burnt down in 1916, the former design and decoration scheme has been followed.

Mr. Douglas Vickers presided, and among those present were the Countess of Limerick, Miss Shortt, the Hon. Mrs. Douglas Vickers, Sir Trevor Dawson and Lady Dawson, and Sir Vincent Caillard.

Prince Albert, in opening the theatre, said that not many people had realised what a vast amount of labour to win the war had been done by workers of big firms like Vickers, and their thanks went out to them. We had always been the leading industrial nation of the world, but we were going to have to fight, and it was on the workers more than ever that we depended to secure that end. Only by hearty co-operation between employer and employed could we hope to win through.

During the evening Sir Trevor Dawson presented gold watches, on behalf of Messrs. Vickers to Capt. Sir John Alcock and Lieut. Sir Whitten Brown to commemorate their flight across the Atlantic. A diamond and emerald brooch in the form of a Vickers' aviation badge, was also presented to Miss Kennedy, Sir Whitten Brown's fiancée.

For the opening performance there was an augmented orchestra conducted by Mr. Kendall Grimston, and among those who contributed to the programme were Mr. Albert Sammons, Miss Sterling MacKinlay, Miss Dorothy Varick, Mr. George Baker, Miss Ethel Walker, and Mr. F. A. W. Docker.

Cross Country Races from Hendon

AFTER the events at Hendon on Saturday, Sunday and

Flying at Sheffield

SHEFFIELD has been taking a great deal of interest during the past week as a result of the "flying week" arranged by Messrs. Vickers at the instance of the development committee. The four Avros at the Coal Aston aerodrome have been kept busy taking passengers, and the Vickers-Vimy was never without its full complement of 10 passengers when it went for a trip over the city. On July 24 the "Vimy," piloted by Capt. S. Cockerill, took a load of newspapers from Sheffield to Doncaster, and on Saturday the same journey was made with a bag of mails.

On July 25, Capt. Sir John Alcock and Lieut. Sir A. W. Brown were entertained to luncheon at the Vickers works, and were subsequently received by the Lord Mayor and Corporation and the Master Cutler at the Town Hall. In the afternoon they visited Coal Aston aerodrome and Capt. Alcock took the wheel of the Vickers-Vimy during one of her trips.

At Liverpool

THE Waterloo aerodrome on the banks of the Mersey was opened last Saturday. As usual a large crowd had collected, but with the aid of the mounted police they were kept in hand. From the air, the flying ground appeared as a yellow disc of sand surrounded by a black band of humanity, with three Avros in the centre.

Capt. E. Maitland Heriot, D.S.C., Lieut. Shanks and Maj. McMinnies, A.F.C., were the pilots, whilst Lieut. Bambridge, who had the distinction of losing the tail of his machine at 15,000 ft. in France, and descending on the top plane more or less successfully, was in charge of the ground operations. For four hours the machines were busy taking up passengers, and trips to Southport and Blackpool were in great demand.

At Other Centres

FLYING at Morecambe is now in full swing with Lieut. Macrae, M.C., in charge. Lieut. Moxon is established at Douglas, whilst Blackpool has excelled all records—over 1,000 passengers were taken last week. The weather has been perfect and the tides have not interfered with flying. We understand that the daily service to Manchester from Blackpool and Southport is beginning to pay its way, more and more passengers availing themselves of the air journey to the coast. The service has run daily for close on three months without even a forced landing to disturb the even tenor of its way, and there is every hope that August will prove a record. The time-table of this service reads as follows:—

Leave Blackpool daily, Sundays excepted ..	Noon.
Arrive Southport	12.15 p.m.
Arrive Alexander Park, Manchester	12.45 p.m.
Leave Alexander Park, Manchester	2 p.m.
Arrive Southport	2.30 p.m.
Arrive Blackpool	2.45 p.m.

The fare is £4 4s. single, and £9 9s. return.

Monday next, the weekly races will be suspended until the Hendon-Brighton-Hendon race which is provisionally fixed to take place on Saturday, August 30. The Hendon-Manchester-Hendon race will probably take place on Saturday, September 20.

Vickers Workers and Atlantic Prize

ONE of the first acts of Capt. Sir John Alcock and Lieut. Sir A. W. Brown, when they received the £10,000 *Daily Mail* prize for crossing the Atlantic was to set aside £2,000 for distribution among the employees at the Vickers works at Weybridge, who helped to produce the Vickers-Vimy machine. The firm has now decided to augment the amount until it is sufficient to pay one week's wages to all employees at the works. Hence, when the works close for a week early in August they will receive payment for the holiday.

Great efforts are being made to repair the famous "Vimy" by Vickers' sports day, August 23. Capt. Sir John Alcock is expected to fly it to the sports ground at Byfleet.

Mr. Raynham Back

MR. F. P. RAYNHAM, the pilot of the Martinsyde machine entered for the Transatlantic Prize arrived at Woking on Monday, and met with an enthusiastic reception at the works. His misfortunes have in no way dimmed his faith in long-distance flying, although he admits that he has learnt a lot from them as well as from his rivals' success. Now that the Atlantic has been flown he thinks the next thing to do is to make the crossing reasonably safe. His opinion is that the most practical form of machine for the purpose is a flying-boat capable of weathering heavy seas. This will call for greater engine power and machines of much greater carrying-capacity than the biggest machines of the present time.

THE BRITISH SCIENTIFIC PRODUCTS EXHIBITION, 1919

It has often been said that the war just ended was an engineers' war. While this is undoubtedly true, the claim should, we think, be extended by including the industrial world generally as part of that "engineers' war." Especially does this apply as regards aviation. From a small nucleus of aircraft constructors with which the War was started, the aviation industry has spread to all conceivable branches and forms of industry; from the armament firms down to the makers of tinctures. Indeed, it would be difficult to call to mind a single industry which has not directly or indirectly been drawn upon by the manufacturer of aircraft and its equipment. The high state of perfection to which British aircraft has attained during the War is in no small measure due to a closer co-operation of scientific knowledge and industrial enterprise than ever existed before the War, and the necessity of continuing this alliance after the War is undoubtedly most essential if Britain is to maintain her leading place in the markets of the world.

There is always the danger that this fact may be lost sight of, and that industry may drift back into the old grooves. This is not so much due to indifference of manufacturers as it is due to neglect of their interests by the State, or to lack of support of home products by the public. Inasmuch as the British Scientific Products Exhibitions, organised by the British Science Guild, have for their object the stimulation of the development of industry through the intelligent application of scientific knowledge and method, they should be welcomed by manufacturers and the public alike, and it should be realised that they are of the greatest value to the country. The exhibition held at King's College last year was a most convincing representation of the advantages of close co-operation of scientific knowledge and industrial enterprise. It is to promote the industries established during the War and to stimulate the development of other industries dependent upon the applications of science that the second British Scientific Products Exhibition has been organised by the British Science Guild. As King's College was not available for the purpose this year, the exhibition is held at the Central Hall, Westminster. It is open on week-days from 11 a.m. to 7 p.m., and on Saturdays from 12 a.m. to 9 p.m. The exhibition, by the way, closes on August 6, and we should advise our readers to keep this in mind so as not to miss the opportunity of visiting what is undoubtedly one of the most interesting and instructive shows of the year. The entrance fee is so small as to be within the reach of all—one shilling.

With regard to the exhibits, these include an enormous variety, all of which claim attention, but naturally we must confine ourselves to those relating directly to aircraft. We would point out, however, that visitors chiefly interested in aviation should not by any means take it for granted that all the forms of industry connected directly or indirectly with aviation are represented only in the aircraft section, but that many of the exhibits shown in other sections bear very directly upon matters connected with aircraft construction. Thus, to mention only one instance out of many, the metallurgy section will be found of the very greatest moment to those who are more than superficially concerned in the materials employed not only in aircraft engines, but also in many parts of the aircraft itself.

Space does not permit of giving a complete catalogue of all the various exhibits in the aircraft section, but some idea of the nature of the exhibition may be given by referring briefly to the more important items.

The Airship exhibits, in addition to a number of photographs and diagrams of airships of the rigid and non-rigid types, include a model of R 34, and a great number of instruments and appliances used on board an airship. Thus one may mention cooking apparatus heated by the exhaust gases from the engines. Proto gear for the use of men working in the gas space of an airship, safety lamps for use in spaces where there may be a mixture of hydrogen and air. In addition there are samples of navigation instruments of various types, while a reminder of the martial activities of airships during the War is provided by a course setting bomb sight. Depending from a girder of a rigid airship is a fabric water ballast bag, while the non-rigid type of airship is represented by among other items, ripping panels, rigging cables and patches, etc. There is also a comprehensive collection of airship envelope fabrics with different kinds of painting, etc.

The A.I.D. is well represented by specimens of good and bad aircraft timbers, samples of aeroplane fabrics with data relating to weight and strength, etc., samples of doping, good and bad, and moisture determinators

for aircraft timbers. It is not, perhaps, generally known that X-rays photography has been called into service for the determination of defects in wooden aircraft parts, located internally in the wood where they could not otherwise have been detected. A series of X-ray photographs illustrate very convincingly how this can be, and has been, done, in many cases with a probable saving of the lives of officers who would have manned the aeroplanes into which the faulty part would otherwise have been built. The Gauge Department of the A.I.D. shows a variety of types and sizes of gauges used in the construction of engines and planes, the gauges being manufactured by a number of different firms.

The different types of aero engines are represented by the exhibition of various engines and parts. Thus there is a complete Rolls-Royce Eagle VIII, component parts of a R.R. engine, a section model (two cylinders only) of a 90 h.p. R.A.F. engine, parts in various stages of manufacture of a Wolseley-Viper, parts of Gnome, Le Rhone, and B.R. 2 engines, three stages of manufacture of a Dragonfly cylinder, and a section of a cylinder, piston and connecting-rod of a Cosmos "Jupiter" engine. A variety of magnetos is also shown. Samples of castings, die castings and other forms, some of a very intricate nature, give a good idea of the perfection to which this form of metal work has attained of recent years.

It is a sign of the times that metal construction of aeroplanes is extremely well represented. A great number of metal spars and wings, some of the latter of the all-metal type, while others are of a composite nature, being made up of metal spars and wood ribs, is exhibited. There are, to mention a few at random, metal spars by firms such as Dunlop, Rudge-Whitworth, Vickers (the latter both in steel and duralumin), Boulton and Paul, and the Steel Wing Co. Many of these spars, especially the later types, show not only a smaller weight per linear foot than the corresponding wooden spar, but also a considerable increase in strength, in some cases this increase amounts to over 50 per cent. Built-up metal struts are also shown, which give good results. Most of these spars, wings and struts were dealt with by Dr. Thurston, in his recent excellent paper read before the Royal Aeronautical Society (which was published in *FLIGHT* at the time), and the principle of their construction will, therefore, be known to our readers. Many little constructional details cannot, however, be shown adequately in illustrations, and a visit to the exhibition will, therefore, enable readers to examine for themselves these wonderful specimens of the metal constructor's art. While on the subject of metal construction, it should be mentioned that, while the foregoing refers to built-up sections manufactured in most instances from metal in sheet form, there is a very extensive exhibition of tubular metal work, in which the well-known firm of Accles and Pollock is well represented.

The National Physical Laboratory is represented by a small wind tunnel (about 2 ft. diameter) fitted complete with fan, balance and models to be tested. To those who have not had the opportunity of visiting the N.P.L. at Teddington, this small wind channel gives a very good idea of the way in which model data relating to the air forces on parts and complete machines are obtained. Of equally great interest proves a small water channel in which the streamline flow of water past objects placed in the channel is shown by injection of a coloured liquid. The exhibition of these channels, although appearing very elementary to the initiated, cannot fail to prove of the greatest educational value where the general public is concerned, affording as it does an excellent demonstration, although in a small way, of the kind of research work which has done so much to place British aviation in the position where it is to-day.

Needless to say the exhibits in the Aircraft section include a great variety of instruments, such as navigation instruments, cameras, wireless telegraphs and telephones, oxygen apparatus, etc. The space available does not permit of any firm exhibiting complete machines, but the Aircraft Manufacturing Co. are showing a set of excellent scale models, so accurately made that they give a very good idea of the actual machines. They include models of a D.H. (Airco) 6, D.H. (Airco) 9, D.H. (Airco) 9A, and D.H. (Airco) 10A.

There is a great number of other interesting items to be seen at the exhibition, and we would strongly urge those of our readers who can possibly manage to do so to pay a visit to the exhibition. It will not be regretted. And we would again remind our readers that the exhibition closes on August 6.

U.S.A. NAVY F-5-L FLYING BOAT*

THE F-5-L boat seaplane is a twin-motored tractor biplane, having a total flying weight of nearly 7 tons, a cruising radius of 10½ hours as a fighter, or 8½ hours as a bomber. It carries a military load of over 1,400 lb., with a crew of four men. This machine is a formidable engine in naval war craft, and it is so designed that it may be quickly and efficiently made under war conditions.

In the case of this machine the United States Navy, as did the Army, took a foreign design and modified it to meet American production methods. It is interesting to note, however, that in this particular case the English design had been based upon an American model, the large Curtiss flying-boat—the H-12—which was the forerunner of both the H-16 and the F-5-L.

The F-5-L is a somewhat larger machine than either the H-12 or the H-16, and is capable of carrying a greater useful load. It was originally developed at Felixstowe, and the name "F-5" was chosen to denote the English experimental seaplane factory at Felixstowe ("F"), and the model number design in machine ("5"). The United States Navy added the letter "L," indicating that, as built in U.S.A., it is driven by Liberty engines.

The lines, overall dimensions and main constructional features were worked out in England, and an experimental plane was constructed there. The details with many modifications were worked out at the Naval Aircraft Factory, Philadelphia, to correspond to its production methods. The planes were then put into production at that and other factories, such changes from the first drawings being made as they were found necessary by tests.

Fundamentally the plane is similar to the American Curtiss flying-boats—particularly the H-16 model. But in size and details it is quite different, being larger and better fitted to emergency production. For example, with few exceptions, the fittings are soft sheet steel, cut from flat patterns and bent to shape. This obviated the necessity of dies and drop forgings, which are particularly difficult to obtain under war conditions. The struts, likewise, are uniform sections, that is, not tapered, so that they can be shaped with a minimum of hand labour. Throughout, the parts are such that duplication is easy, production methods possible, and readily available equipment suitable.

The most noticeable feature in the F-5-L is the degree to which the hull or boat has been streamlined. The hull cover sweeps aft, broken only by the cockpit openings. From an aerodynamic standpoint this is more efficient than the construction of the H-16, where a raised cabin is used. On this model, as on the H-16, the fin edges are continued aft, and join into the lower *longeron*, giving a much stronger and better streamline form. Another feature in the hull construction that is noteworthy is the use of veneer instead of linen doped and painted on the after hull sides. It was found in practice that the linen failed in heavy seas or on a bad landing, but this failure was obviated by the use of veneer.

The specifications herewith will give some idea of the size and capacity of this seaplane. It will be noted that the lift,

per square foot of surface is from 9.3 to 9.5 lb. per sq. ft., and is somewhat greater than land practice.

Overall span (top plane) ..	103 ft. 9½ ins.
Overall span (lower plane) ..	74 ft. 4 ins.
Overall length ..	49 ft. 3½ ins.
Overall height ..	18 ft. 9½ ins.
Hull beam ..	10 ft. 1½ in.
Chord (H-12 curve) ..	8 ft.
Gap ..	8 ft. 10½ ins.
Angle of incidence ..	3° 40'
Dihedral ..	1° 30'
Angle of incidence of tail ..	2° 30'
<i>Areas</i>	
Top plane (including <i>aileron</i> s) ..	848 sq. ft.
Lower plane ..	546 sq. ft.
<i>Aileron</i> s (two) ..	118 sq. ft.
Total of main planes ..	1,394 sq. ft.
Main plane fins ..	30 sq. ft.
Gross weight ..	13,659.5 lb.
Useful load (1,405 lb. military load) ..	5,224 lb.
Loading per sq. ft. ..	9.5
Power plant ..	Two 330 h.p. Liberties.
Speed range ..	57-90 m.p.h.
Climb ..	2,600 ft./10 mins.

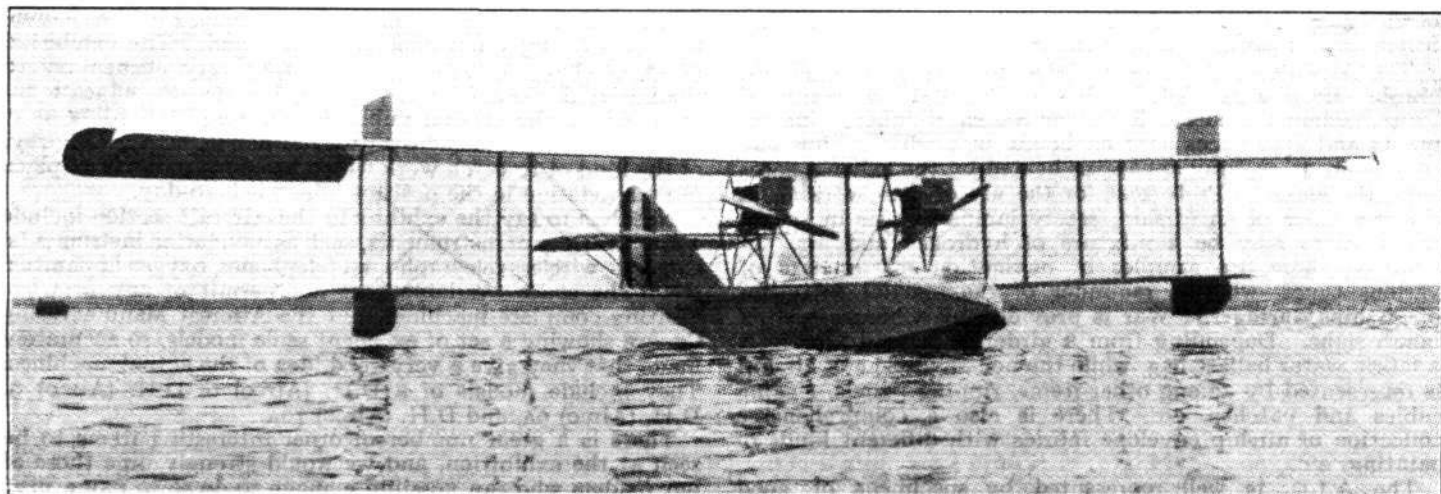
With few exceptions, all large seaplanes have been previously built with unbalanced control surfaces. However, on the F-5-L both the *aileron*s and rudder are balanced. The purpose is, of course, to increase the controllability of the unit, and in the case of the *aileron* control the result is as anticipated. Differing from the usual control surface balance construction, the balance on these *aileron*s is cambered so that it has a positive lift. By this construction the *aileron*s tend to be more sensitive in their action and to operate with less difficulty and with less balance surface.

The planing action is increased by the use of vents extending through the hull aft of the rear steps. Although the cabin top over the pilot's cockpit is eliminated, a certain amount of protection is afforded the pilot by small adjustable windshields.

The whole lay-out of the machine is such that the duties of the crew may be most readily carried out. The observer's cockpit is in the nose of the machine, and from it the widest range of vision is possible. At the bow is mounted the bomb sight, and adjacent to it are the bomb-release pulls, ammunition racks, signal pistols, binoculars, etc. A machine-gun turret is mounted on the scarf-ring of the forward cockpit.

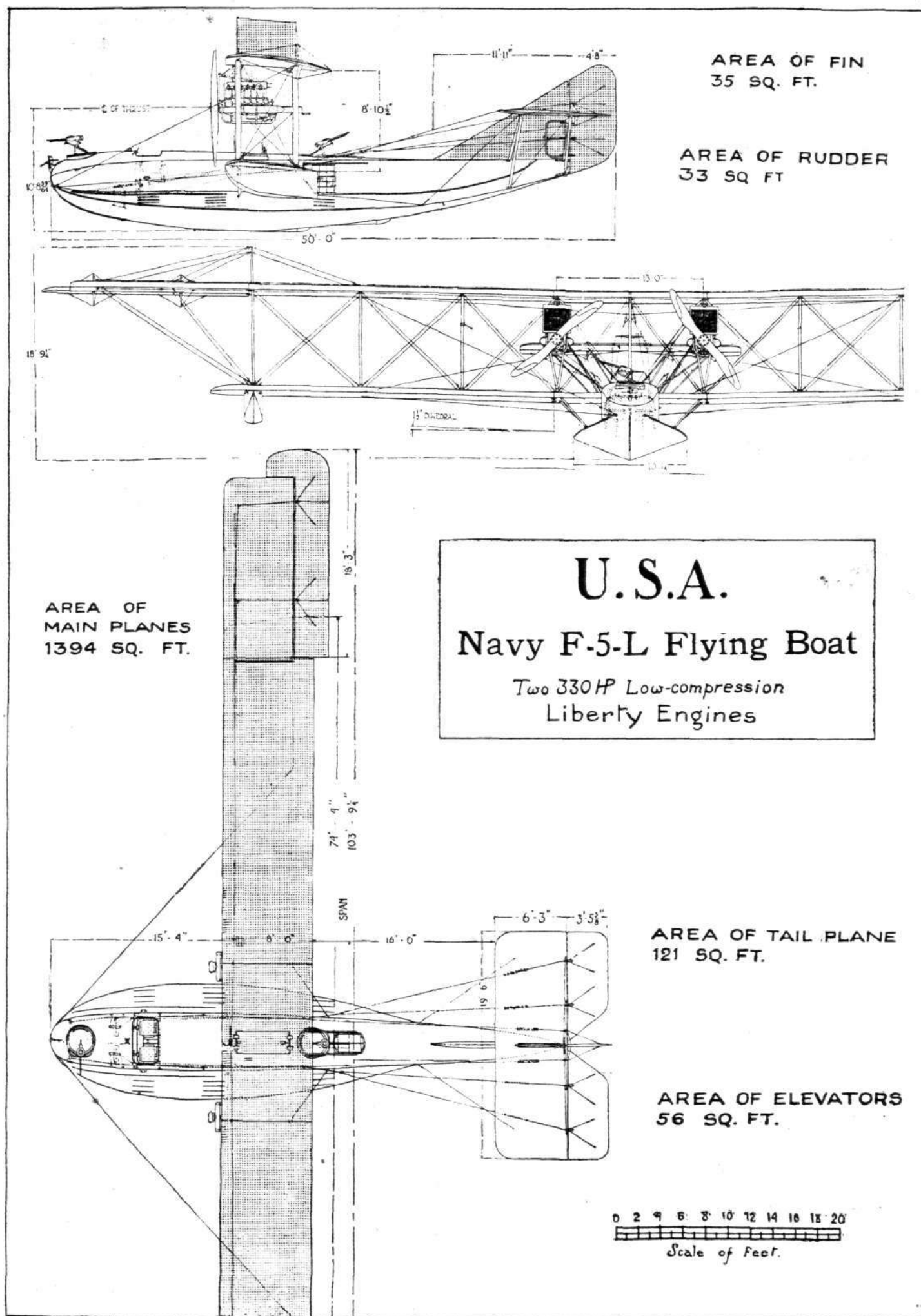
The pilot's cockpit is just aft the observer's cockpit, and may be readily reached from it when the machine is in operation. The pilots are seated on comfortable seats, hinged on a bulkhead and attached to a transverse tube by means of a snap-catch that may be instantly released. This permits the observer to pass aft at will without disturbing the pilot.

A wheel control of the dual type is used. It comprises a laminated ash yoke on which are mounted the two *aileron*



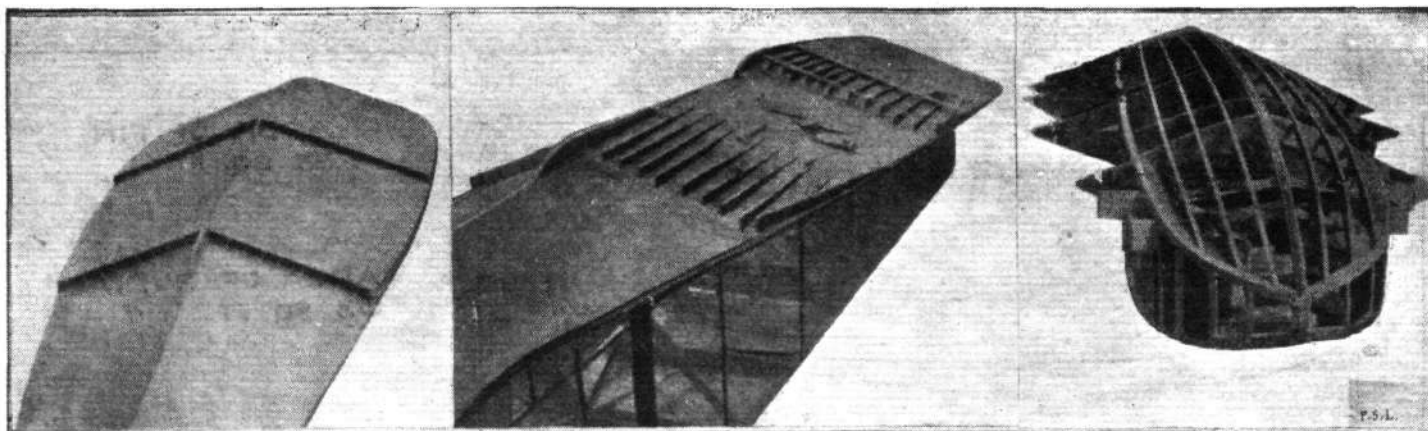
Three-quarter front view of the U.S.A. Navy F-5-L flying-boat

* Extracts from an article by S. T. Williams, Chief Engineer, U.S. Naval Aircraft Factory, appearing in *Automotive Industries* (U.S.A.).



U.S.A.
Navy F-5-L Flying Boat
*Two 330 HP Low-compression
Liberty Engines*

THE U.S.A. NAVY F-5-L FLYING-BOAT. Plan, front and side elevations to scale



Three views showing the construction of the hull of the F-5-L flying-boat

wheels connected by an endless chain. An instrument-board, containing tachometers, altimeters, air-speed indicator, oil-pressure indicators, inclinometer, and pilot-directing bomb sight is mounted directly in front of the pilot.

On the starboard side of the hull are the individual engine switches, ammeters and emergency switches, together with the circuit breakers. The two compasses are mounted at some distance apart, so that they cannot interfere with each other. One is on the deck and the other on the floor. All instruments are self-luminous, but instrument-board lights are provided. The spark controls are at the starboard side

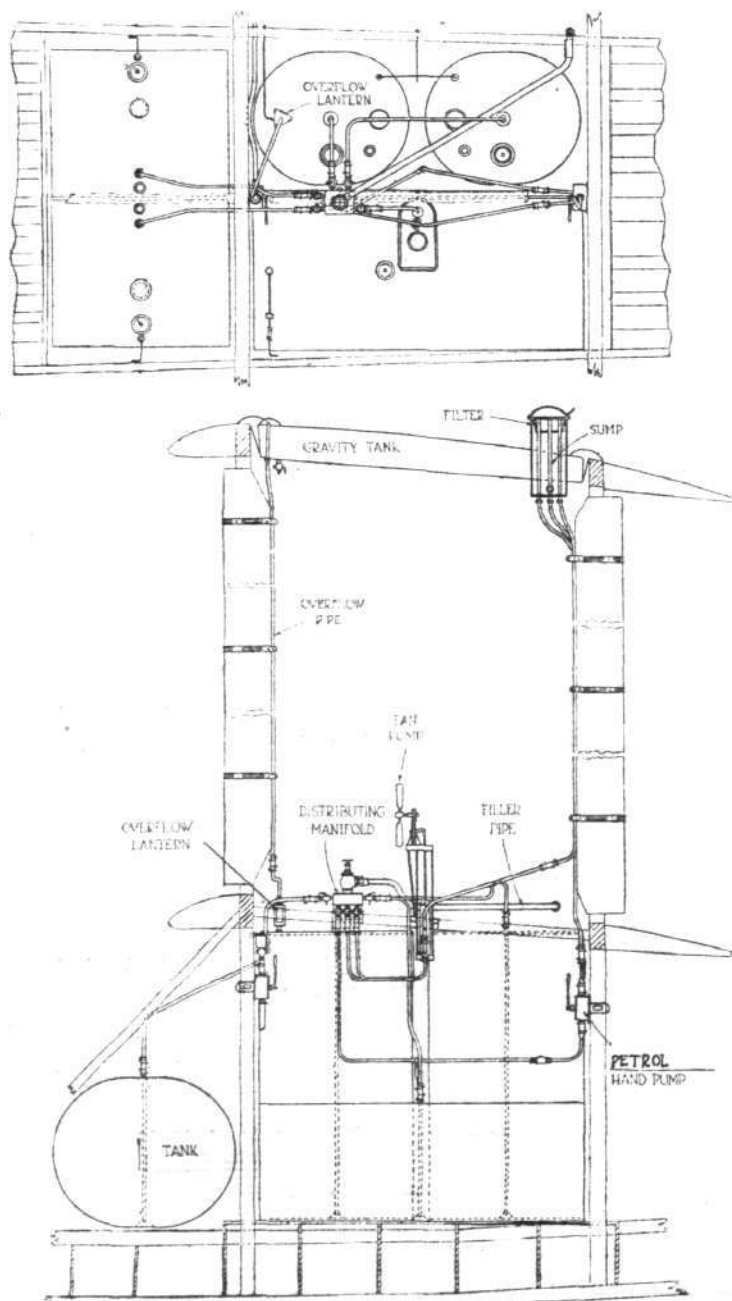
of the starboard pilot's seat, but the throttle controls are between the two pilots, so that either may operate them. Fire extinguishers are placed conveniently at each station, those in the pilot's cockpit being attached to the bulkhead beneath the seat. The wireless operator's station is on the starboard side, just aft the pilots. The equipment is mounted on a small veneer table, and used in conjunction with a telescopic mast that is carried in the stern. A celluloid window in the hull side provides necessary light. The mechanics' station is amidships by the petrol tanks and pumps, and their main duty is to see that the plane is "trimmed" by pumping petrol from the tanks alternately; to see that the engines do not overheat, and that all parts function properly. The water and oil thermometer are mounted on the sidewalk beam adjacent to the mechanics' station.

Aft the mechanics' station, or wing section, is the rear gunner's cockpit. Three guns are accessible from this station, and it also provides a good point of observation or position for aerial photography. All machines are equipped with inter-communicating telephones, the receivers being incorporated in the helmets and connection effected by terminal boxes at each station. It is thus possible for all members of the crew to be in constant communication. In addition to the equipment indicated, the following are some of the miscellaneous items usually carried: tool kits, water buckets, range and running lights, pigeons, emergency rations, drinking water, medicine chest, sea anchor, chart board, mud anchor, anchor rope, heaving lines, signal lamp, binoculars, Very's pistol, ammunition, life jackets, and possibly electric warmers. Included also are the priming cans, drinking cups and usually several personal items. All this is exclusive of the ordnance equipment of bombs, machine guns, etc.

Considering the size of the machine and the amount of material carried, the performance is quite remarkable. In fact, it compares very favourably with the performance of land planes having the same specifications and not hampered by the heavy boat construction. The time required to get the machine from the water varies with the wind velocity, but with a 15-mile wind and the plane fully loaded, from 30 to 40 sec. is required. The speed at take-off is about 47 knots on the air-speed indicator, and a machine of this design has made a climb of 4,200 ft. in 10 mins. A horizontal speed of from 85 to 90 m.p.h. is attained, but on patrol duty they are generally flown at a more economical speed, such as 70 m.p.h. When geared Libertys were tried out in one of these machines a speed of 102 m.p.h. was attained, but this was a special power-plant equipment. The engine revolutions are about 1,500, though this, of course, varies with the types of propeller used. At full speed the petrol consumption is about 65 galls. per hour, and the oil consumption about 2.6 galls. per hour. By throttling down the engine to 1,350 r.p.m., or to a speed of about 60 knots, the petrol consumption per hour is reduced to 44 galls., the oil consumption remaining the same. This gives a maximum cruising time of 10.6 hours with a light machine, or 8½ hours fully loaded. The cruising time at full speed is 7.3 hours and 5.9 hours respectively.

The advantages of operating at cruising speed are many, and it is at this speed that the plane is chiefly operated. Among the advantages are increased engine life, greater ease of control, longer cruising radius, less strain on plane parts, and time for more extended observation. When running at full speed, control is not particularly easy, though under normal conditions one pilot can operate the machine without difficulty. However, the reserve control is necessary to lift the machine from the water, and in cases of emergency, though not ordinarily used.

(To be concluded.)



Diagrams of the fuel installation on the F-5-L flying-boat

OURISMS FROM THE FOUR WINDS

A WELL-DESERVED recognition of the services rendered during air-raids has been made by Southwark, the Mayor of that Borough having last week presented 91 medals to Volunteers.

ILFORD has a local War-trophies museum of its own, and the local air-raid syren is one of the honoured items which has found a resting-place amongst the evidences collected of Hun beastliness.

IF all the theatrical setting is necessary, which has accompanied a mid-air wedding in New York last week-end, most folk will probably think it better to remain single. That any sane people, or any decent cleric, can be found to participate as principals in absurdities of this kind must be attributed to the aftermath of the effects of war. As a scientific stunt of the Barnum order this most recent marriage by wireless telephony, supplemented by megaphone obligato for the benefit of the bride and bridegroom's guests, the affair might pass muster. But as a serious and solemn ceremony the sooner this sort of fooling is rendered illegal the better.

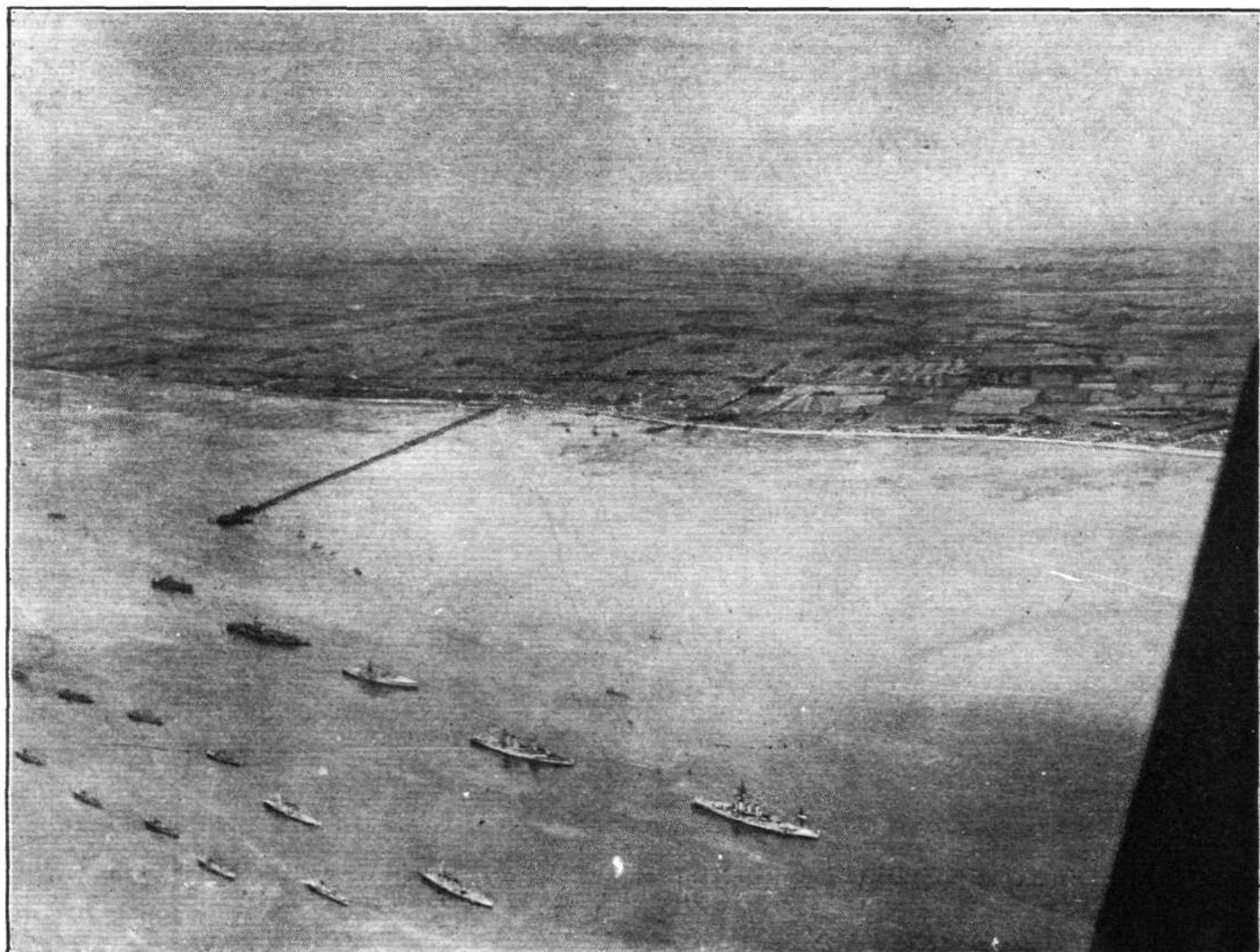
FOOLING of this type is hardly likely to obtain much vogue in Switzerland, where the latest enactments of this close-borough Federal Council not only places somewhat penal responsibilities upon all foreign aviators, but positively forbids "stunts" of any kind. One comfort, at best Switzer-

land hardly lends itself to flying as a pastime, in the ordinary sense.

IN Paris no less than four Commissions are about to get busy estimating and arranging compensation for the damage suffered by the Gay City's inhabitants from bombardments by aeroplanes and long-range guns during the War. There this sort of trouble is treated as National, and the Huns are being called upon to liquidate the bill. Wonder what is being done this side of the streak, in the same direction?

FROM the scene of operations in the region of the Northern Dvina the Bolshies military report of July 25 tells the same old, old story that "an enemy aeroplane dropped 17 bombs without causing any damage." We only hope the laying of these 17 eggs effected, relatively, as much damage as the hundred or so of bombs dropped in London, etc., did, which officially were at the time reported as resulting in "no damage."

NOTHING like getting in early! The first strike of aerial mail pilots—male ones—has taken place and been settled. It appears it was started on July 25 in New York because the Post Office Department refused to reinstate two pilots discharged for refusing to ascend recently in a fog, the New York—Chicago aerial mail being the service most affected. It was brought to a temporary happy conclusion the next



"Flight" Copyright.

OUR FLEET IN THE THAMES ON VICTORY DAY: A view, from an aeroplane, of a portion of the Fleet off Southend, and showing the town of Southend and the Pier.

day by the promise of a conference with the Washington postal authorities. All the same, it's a bit early in aviation history to start emulating the irresponsible "down tools" brigade, and we shall await further details as to that exact order "to ascend in a fog," which might put a very different complexion upon the whole incident.

QUITE a nice little batch of 300 decorations were conferred by the General-in-Chief of the R.A.F. at the R.A.F. Investiture in the quadrangle at Buckingham Palace one day last week. Prince Albert, who is a captain in the Force, accompanied King George, and there were many very notable recipients who were present to receive their reward for heroic war deeds.

Is it a direct result of R. 34's double Atlantic crossing, that large dirigibles for service with the American Navy are to be pushed on. In announcing this speeding up Admiral Benson, Chief of Naval Operations, said that Congress had authorised the construction of large hangars and the construction or purchase of two large dirigibles. "We are going ahead," he said, "with this important development. At the outset our large dirigibles will be used for experimental purposes."

He added that the work of construction of the hangars will be rushed at top speed so that the first dirigible may be "laid down" at the earliest possible moment.

A MYSTERIOUS "mono" has apparently made its appearance in London. Recently "Perplexed" asked through a Londoner's Diary "what was the breed of the huge bird that took up its position about 8.30 p.m. one day last week on the top of the gilded cross of St. Paul's Cathedral.

"It remained there till 9 o'clock next morning," "Perplexed" continues, "and was watched by many hundreds of people from the G.P.O., and by the St. Paul's shop residents. It was shot at twice, but that did not disturb its repose.

"It had a huge beak, like an eagle's, and a short, thick neck, and its wings when opened out appeared to be about 15 ft. or 17 ft.

"It was thought that it might have escaped from some private aviary.

"I cannot identify the fowl from this description. Possibly it was the German eagle taking one long, last, disappointed look at London, and muttering, 'What a city to loot!'"

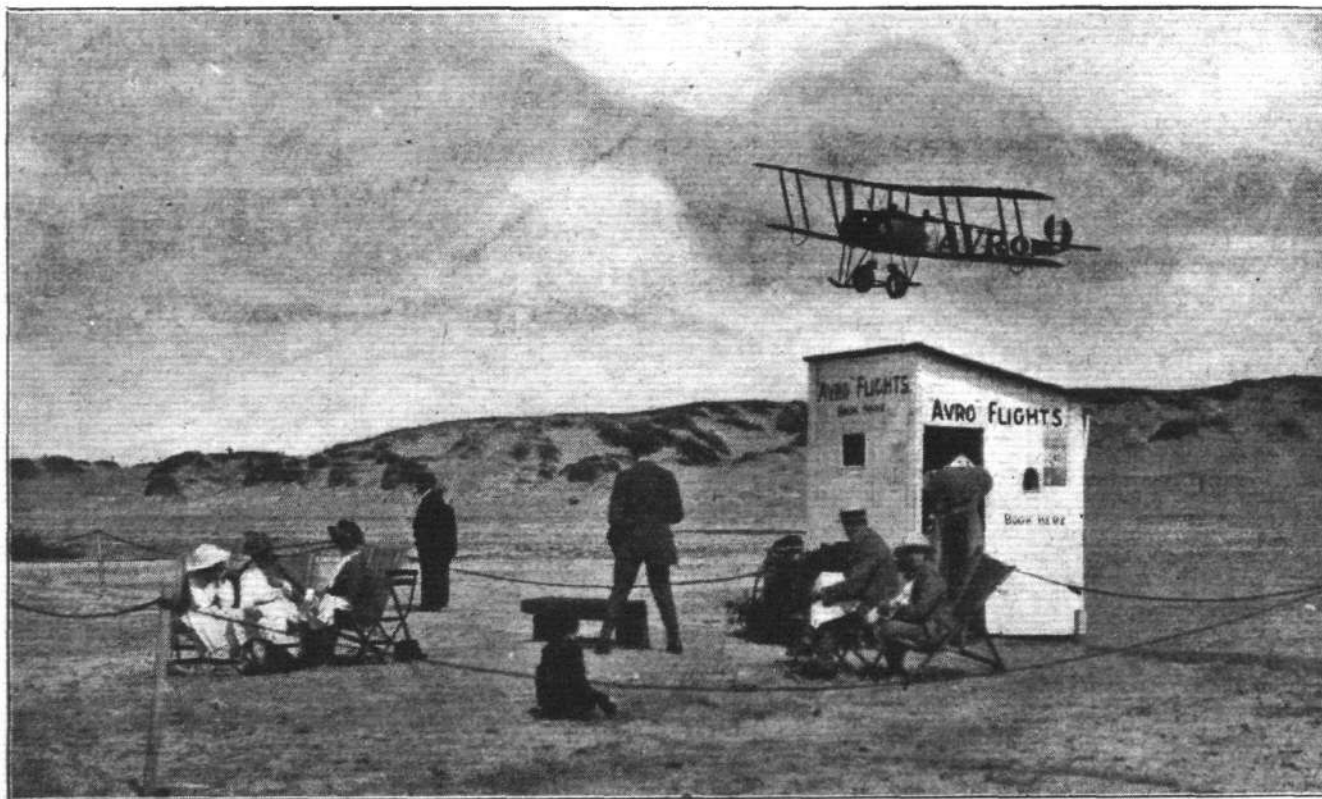
If this sort of thing continues, the sea serpent will soon have to look to its laurels.

MR. A. G. BARKER, of Green Lanes, has views about airship nomenclature. R. 34 and N.S. 106 and similar signs are hardly attractive, and Mr. Barker suggests as alternatives, such identifying names as "Columbus II" or "The Aerial Columbus." We quite agree with this critic that "the present system of continuous numbering will not do at all," but at the same time we hope something more original and attractive than the "Columbus" suggestion may materialise.

MR. WINSTON CHURCHILL has imagination without doubt, and for that reason he is a welcome head to the Air Ministry, although we have in no way lessened our objections to the dual control position at present existent. Mr. Churchill, nevertheless, upon every suitable occasion is to the fore with the importance of the R.A.F., both in the present and in the future. Last week he once again emphasised his belief in the effectiveness and the economy of our Air Force, when replying to a question in the House by Lieut.-Commr. Kenworthy, who was desirous of knowing what our future policy was in regard to the Army of Occupation in Mesopotamia. The Government's future policy, said the Air Minister, was "to keep down the Army as much as possible, and it was hoped to make considerable use of the Air Service with the view to economising troops."

MOSQUITOES—in North Carolina, at any rate—will begin to wish that flying had never been invented, for man-made insects are invading their territory, with a view of their—the mosquitoes'—eventual extinction. The U.S. Navy Department recently sent out Ensign Van Court on an aeroplane along the coast of North Carolina, near Morehead City, to spy out the breeding-places of mosquitoes. Once these are located the sanitation engineers do the rest.

THE latest thing from the land of stunts is rather—er—well!! It consists of a boxing bout in an aeroplane above Camp Dix, N.J. The boxers will be belted within a miniature "ring" in the tonneau of a large bombing 'plane, whilst the referee and timers will occupy another 'plane flying alongside. Nothing is said about the seconds. No doubt they will "drop in" by means of Guardian Angel parachutes.



AVRO FLIGHTS AT SOUTHPORT: Captain Collison landing after a popular guinea circuit of the town

A Trial in Portugal

EVIDENTLY aviation is being seriously considered in Portugal, as word comes that a competition over the course Lisbon-Oporto-Vianna-Lisbon is being organised as a test for selection of machines in the flight of over 2,000 miles from Lisbon to Guinea.

Up-to-Date Bolshies in Portugal

BOLSHEVISTS in the villages round Lisbon are said by the local newspapers to have made an attempt to get possession of an aviation school and to be manufacturing bombs. It is added that a police investigation of the matter is being conducted.

INTERNATIONAL AIR NAVIGATION CONVENTION

In our last issue we reproduced the International Air Navigation Convention, drawn up in Paris, and this week we deal with the annexes. In the main, the details of the regulations are similar to those for civilian flying in the United Kingdom, published in *FLIGHT*, of May 8, 1919, and in such cases we have not reprinted them *in extenso*, but have only pointed out where they differ from the English regulations. Therefore the following should be read in conjunction with a copy of *FLIGHT*, May 8.

ANNEX A. The Marking of Aircraft

I.—GENERAL.

(a) The nationality mark will be represented by capital letters in Roman characters, e.g.,

France..... F.

The registration mark shall be represented by a group of four capital letters; each group shall contain at least one vowel, and for this purpose the letter Y shall be considered as a vowel. The complete group of five letters shall be used as a call sign of the particular aircraft in making or receiving signals by wireless telegraphy or other methods of communication, except when opening up communication by means of visual signals, when the usual methods will be employed. The nationality and registration marks are assigned in accordance with the table contained in section VIII. of this Annex.

(b) On aircraft other than State and commercial, the registration mark shall be underlined with a black line.

(c) The entry in the register and the certificate of registration shall contain a description of the aircraft and shall indicate the number or other identification mark given to it by the maker; the nationality and registration marks mentioned above; the usual station of the aircraft; the full name, nationality, and residence of the owner and the date of registration.

(d) All aircraft shall carry affixed to the car or to the fuselage in a prominent position a metal plate, inscribed with the names and residence of the owner and the marks of nationality and registration.

CERTIFICATE OF REGISTRATION.

(Provisional Form.)

Nationality.....	Maker.....
Nationality mark.....	Maker's number.....
Registration marks.....	Description.....
Date of registration.....	Owner's full name.....
Type of aircraft.....	Owner's residence.....
{ Tourist.....	Owner's nationality.....
{ Commercial.....	Station of the craft.....
{ State.....	
Signature and seal of authority issuing this certificate.....	

[Sections II., III., IV., V., VI., VII., are as in Schedule IV. of the British Regulations.]

VIII.—TABLE OF MARKS.

The nationality mark of the State named below applies to the aircraft of its Dominions, Colonies, Protectorates, Dependencies, or of countries of which it is the Mandatory State.

Country.	Nationality Mark.	Registration Marks.
U.S.A. ..	N	All combinations made in accordance with the provisions of Section I. (a) of this Annex, using a group of 4 letters out of the 26 of the alphabet, each group containing at least one vowel, e.g., ADCJ, PURN.
British Empire ..	G	
France ..	F	
Italy ..	I	
Japan ..	J	All combinations made with B as first letter.
Bolivia ..	C	
Cuba ..	C	
Portugal ..	C	
Roumania ..	C	All combinations made with R as first letter.
Uruguay ..	C	
Czecho-Slovakia ..	L	
Guatemala ..	L	
Liberia ..	L	All combinations made with L as first letter.
Brazil ..	P	
Poland ..	P	
Belgium ..	O	
Peru ..	O	All combinations made with P as first letter.
China ..	X	
Honduras ..	X	
Serbia-Croatia-Slavonia ..	X	
Haiti ..	H	All combinations made with H as first letter.
Siam ..	H	
Ecuador ..	E	
Greece ..	S	
Panama ..	S	All combinations made with P as first letter.
Hedjaz ..	A	

ANNEX B.

Certificates of Airworthiness

The following main conditions govern the issue of certificates of airworthiness:—

1. The design of the aircraft in regard to safety shall conform to certain standard minimum requirements.
2. A satisfactory demonstration must be made in flying trials of the actual flying qualities of the type of aircraft examined, provided that machines subsequently manufactured which conform to the approved type need not be subject to such trials. The trials shall conform to certain standard minimum requirements.
3. The construction of every aircraft with regard to workmanship and materials must be approved. The control of the construction and of the tests shall be in accordance with certain standard minimum requirements.
4. The aircraft must be equipped with suitable instruments for safe navigation.
5. The standard minimum requirements of paragraphs 1 to 3 inclusive shall be fixed by the International Commission for Air Navigation. Until they have been so fixed each contracting State shall determine the regulations under which certificates of airworthiness shall be granted or remain valid.

ANNEX C.

Log Books

[The particulars regarding entries are the same as in Section V. of the British Supplementary Air Regulations. See *FLIGHT*, May 8.

It is pointed out that the journey log shall be kept for all aircraft; that

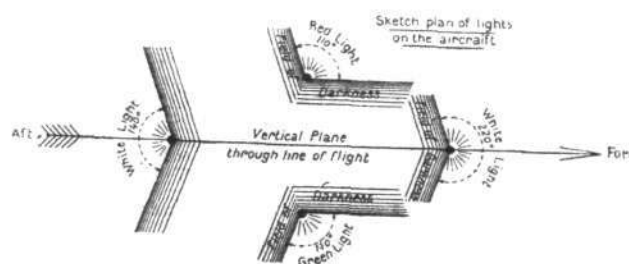
the aircraft log, engine log and signal log are obligatory only in the case of aircraft carrying passengers or goods for hire.]

ANNEX D.

Rules as to Lights and Signals

Rules of the Air

[This is the same as in Schedule VII. of the British Regulations with the exception that a sketch is given, showing the angular limits laid down in the rules. These limits shall be determined when the aircraft is in its normal attitude for flying on a rectilinear horizontal course. Metric measurements are given instead of British, i.e., 2 metres instead of 6 feet; 3 kiloms. instead of 2 miles.]



[In Section II. Rules as to signals, there is a new rule 18, and the British Regulation 18 has been reworded. The new rules are as under.]

18. To warn an aircraft that it is in the vicinity of a prohibited zone and should change its course, the following signals shall be used:—

(a) By day: three discharges, at intervals of 10 seconds, of a projectile showing, on bursting, white smoke, the location of the burst indicating the direction the aircraft should follow.

(b) By night: three discharges, at intervals of 10 seconds, of a projectile showing, on bursting, white stars, the location of the burst indicating the direction the aircraft should follow.

19. To require an aircraft to land, the following signals shall be used:—

(a) By day: three discharges, at intervals of 10 seconds, of a projectile showing on bursting black or yellow smoke.

(b) By night: three discharges, at intervals of 10 seconds, of a projectile showing on bursting red stars or lights.

In addition, when necessary to prevent the landing of aircraft other than the one ordered, a searchlight which shall be flashed intermittently shall be directed towards the aircraft whose landing is required.

22.—(a) In the event of fog or mist rendering aerodromes invisible, their presence may be indicated by a balloon acting as an aerial buoy and/or other approved means.

(b) In fog, mist, falling snow or heavy rainstorm, whether by day or night, an aircraft on the water shall make the following sound signals with a sound apparatus:—

(1) If not anchored or moored, a sound at intervals of not more than two minutes, consisting of two blasts of about five seconds duration with an interval of about one second between them.

(2) If at anchor or moored, the rapid ringing of an efficient bell or gong for about five seconds at intervals of not more than one minute.

III.—RULES OF THE AIR.

[These rules are similar to the British rules, except that two new rules dealing with risk of collision, are inserted after the British rule 20 (22 in the International rules). These new rules are as follows:—]

23. Risk of collision can, when circumstances permit, be ascertained by carefully watching the compass bearing and angle of elevation of an approaching aircraft. If neither the bearing nor the angle of elevation appreciably change, such risk shall be deemed to exist.

24. The term "risk of collision" shall include risk of injury due to undue proximity of other aircraft. Every aircraft that is required by these rules to give way to another to avoid collision shall keep a safe distance, having regard to the circumstances of the case.

[Rules 25 to 34 are similar to the British rules 21 to 30.

Rule 35 same as British rule 31.]

V.—RULES FOR AIR TRAFFIC ON AND IN THE VICINITY OF AERODROMES.

[Rules 36 to 48 are similar to the British rules 32 to 44, except that a white flag (instead of blue) shall be used to indicate a right-handed circuit (Rule 36), and the distances and dimensions are given in metric equivalents.]

VI.—GENERAL.

[Rules 49 to 51 are similar to the British rules 45 to 47.]

ANNEX E.

Minimum Qualifications necessary for obtaining Certificates as Pilots and Navigators

I.—CERTIFICATES FOR PILOTS OF FLYING MACHINES.

(A.) Private Pilot's Flying Certificate.

(Not valid for purposes of public transport.)

[These are similar to the regulations for "A" Private Pilot's Flying Certificate in the British Supplementary Air Regulations, with the exception that a practical knowledge of international air legislation is required.]

(B.) Pilot's Flying Certificate for Flying Machines used for Purposes of Public Transport.

[These are similar to the regulations for "B" Pilot's Flying Certificate for flying passenger or goods aircraft, with the exception that a knowledge of elementary meteorology is required, and there is a new clause reading:—]

Pilots who hold the military pilot's certificate shall be entitled to the private pilot's flying certificate, but, in order to obtain the pilot's flying certificate for purposes of public transport, it will be necessary to pass the technical conditions for navigation as required by B (2) (c).

II.—CERTIFICATES FOR PILOTS OF BALLOONS.

[These are not mentioned in the British regulations.]

1. *Practical Tests:* The candidate must have completed the following certified ascents:—

1. By day: 3 ascents under instruction.
1 ascent in control under supervision.
1 ascent alone in the balloon.

2. By night: 1 ascent alone in the balloon.
Each ascent shall be of at least two hours' duration.

2. *Theoretical Tests:* Elementary aerostatics and meteorology.

3. *Special Requirements:* General knowledge of a balloon and its accessories; inflation; rigging; management of an ascent; instruments; precautions against cold and high altitudes.

Knowledge of rules as to lights and signals and rules of the air; rules for air traffic on and in the vicinity of aerodromes.

Practical knowledge of international air legislation. Map reading and orientation.

III.—CERTIFICATES FOR AIRSHIP OFFICER PILOTS.

[These are not mentioned in the British regulations.]

Every airship officer pilot shall have qualified as pilot of a free balloon.

There shall be three classes of airship officer pilots.

The holder of a first-class certificate is qualified to command any airship.

The holder of a second-class certificate is qualified to command airships under 20,000 cubic metres capacity.

The holder of a third-class certificate is qualified to command airships under 6,000 cubic metres capacity.

All military and naval airship officer pilots are entitled to a third-class certificate.

All military and naval airship officer pilots who have commanded airships over 6,000 cubic metres capacity are entitled to a first-class certificate.

QUALIFICATIONS FOR THIRD-CLASS CERTIFICATE.

Practical Tests: (a) Twenty certified flights (three of which shall be by night) in an airship, each flight being of at least one hour's duration. In at least four of these flights the candidate must have handled the airship himself, under the supervision of the commanding officer of the airship, including ascent and landing.

(b) One cross-country flight on a predetermined course of at least 100 kilometres, terminating with a night landing, and made with a duly authorised inspector on board.

Theoretical Examination: Aerostatics and meteorology. (Density of gases, laws of Mariotte and of Gay-Lussac; barometric pressure, Archimedes principle; confinement of gases; interpretation and use of meteorological information and of weather charts.)

Physical and chemical properties of light gases, and of materials used in the construction of airships.

General theory of airships.

Dynamic properties of moving bodies in air.

General Knowledge: Elementary knowledge of internal combustion engines.

Elementary navigation; use of the compass; location of position.

Inflation; stowage; rigging; handling; controls and instruments.

QUALIFICATIONS FOR SECOND-CLASS CERTIFICATE.

Practical Tests: To be eligible for a second-class certificate a candidate must be holder of a third-class certificate and have at least four months' service as a third-class officer on an airship, and also have completed at least 10 flights as third-class officer on an airship of capacity above 6,000 cubic metres, in which he has handled the airship himself including ascent and landing, under the supervision of the commanding officer of the airship.

Theoretical Examination: Advanced knowledge of the subjects required for the third-class certificate.

QUALIFICATIONS FOR FIRST-CLASS CERTIFICATE.

Practical Tests: To be eligible for a first-class certificate a candidate must be holder of a second-class certificate, have at least two months' active service as a second-class officer on an airship, and also have completed at least five flights as second-class officer of an airship of capacity above 20,000 cubic metres, in which he has handled the airship himself, including ascent and landing, under the supervision of the commanding officer of the airship. Each flight must be at least of one hour's duration with a minimum of 15 hours for the five flights.

Theoretical Examination: As required for a second-class certificate.

IV.—CERTIFICATE FOR NAVIGATORS.

Aircraft used for public transport carrying more than 10 passengers and having to make a continuous flight between two points more than 500 kilometres apart overland, or a night flight, or a flight between two points more than 200 kilometres apart over sea, must have on board a navigator who has been granted a certificate as such after passing a theoretical and practical examination in the following:—

[The requirements are the same as in the British regulations.]

V.—MEDICAL CERTIFICATES.

[Regulations 1 to 5 are similar to No. 4 to 7 in II. Licensing of Personnel in the British regulations. The following two are new:—]

6. No aeronaut who, before the date of the present Convention, has given proof of his flying ability, shall, so long as he retains such ability, be necessarily disqualified because he fails to fulfil all of the above requirements.

7. Each contracting State may raise the conditions set forth above, as it deems fit, but these minimal requirements shall be maintained internationally.

ANNEX F.

International Aeronautical Maps and Ground Markings

[This section is new.]

International maps shall be made and ground marks established in accordance with the following general principles:—

I.—MAPS.

1. Two types of aeronautical maps shall be used. They are hereafter mentioned as *general maps* and *local maps*.

2. The index scheme for the aeronautical maps, both general and local, shall be based on the index scheme adopted for the "International 1:1,000,000 scale map" by the official International Congress convened for the purpose in London in 1909 and in Paris in 1913.

NOTE.—Extract from the resolutions adopted by the Conferences at London and Paris:

The sheets of the International 1:1,000,000 scale map shall include 6 degrees of longitude and 4 degrees of latitude. The limiting meridians of the sheets shall be at successive intervals, reckoning from Greenwich, of 6 degrees, and the limiting parallels, reckoning from the Equator, shall be at successive intervals of 4 degrees.

The longitudinal sectors, from longitude 180 degrees E. or W. of Greenwich, are given numbers from 1 to 60, increasing in an easterly direction.

The 22 zones of 4 degrees in depth, extending from the Equator on each side to 88 degrees latitude, are given letters from A to V.

The polar areas, extending for 2 degrees, are lettered Z.

In the northern hemisphere each sheet shall bear a descriptive symbol composed of the letter N, followed by the zone letter and sector number corresponding to its position, thus N.K.—12.

In the southern hemisphere the letter S shall replace the letter N. Example, S.L.—28.

3. The metre shall be used as the standard of measurement for lengths, distances, heights and depths, reserving for each nation the right to add figures expressing these quantities in its own units.

4. The colours, symbols, and arrangements for production adopted for the International 1:1,000,000 scale map shall be used as far as practicable on the aeronautical maps.

5. The general maps shall be drawn on Mercator's projection and shall be to a scale of 1 degree of longitude equals 3 centimetres. The general maps

shall have marked on them in fine lines the meridians and parallels of each degree, and the meridians and parallels limiting the unit sections of the 1:1,000,000 map shall be accentuated. The same designation of unit sections shall be used as for the 1:1,000,000 map.

6. Each general (Mercator) map shall bear the French heading *Carte Générale Aéronautique Internationale* (see the conventional sign plate, Fig. 1) and under it a translation of this heading in the language of the country publishing the map. It shall also bear an appropriate geographical name.

Each sheet shall show at least the following: principal physical features and geographical names, wireless stations, marine lighthouses (height and range at sea level, colour and character of the light); national frontiers, prohibited areas, principal air routes, lines of equal magnetic variation, South Polar distance, latitude, old and new notation of longitude (see paragraph 7), with an outer margin containing letters and numbers referring to the index of the 1:1,000,000 map, legend of symbols in English or French and in the language of the country publishing the maps, publisher's name, and date of publication and of successive editions.

7. The local maps shall be drawn to a scale of 1:200,000.

NOTE.—For local aeronautical maps of sparsely inhabited countries, the scale of 1:500,000 or 1:1,000,000 as appropriate, may be used.

In addition to the customary latitude and longitude notations, the local aeronautical maps shall bear numbers enclosed in rectangles, corresponding to a new system of co-ordinate reckoning based on the antimeridian of Greenwich and the South Pole. The new grid reckoning, with regard to latitude, shall commence with the South Pole as zero and increase northward by degrees and minutes to 180 degrees at the North Pole, and with regard to longitude shall commence with the antimeridian of Greenwich as zero and run eastward by degrees and minutes to 360 degrees.

8. Each unit sheet of the local aeronautical maps shall bear the French heading *Carte Normale Aéronautique Internationale* (see the conventional sign plate, Fig. 2), and under it a translation of this heading in the language of the country publishing the map. It shall comprise one degree of latitude and one degree of longitude, and shall be designated by a locality name and by the new co-ordinates (described in paragraph 7) of the south-west corner of the sheet, the unit digits being accentuated. In these designating co-ordinates, the figures referring to the South Polar distance shall invariably be written first.

EXAMPLES.—The sheet whose southern boundary is 49 degrees N. (i.e., 139 degrees South Polar distance) and western boundary 2 degrees E. (i.e., 182 degrees from the antimeridian of Greenwich) will be numbered 139-182.

Or the sheet whose southern boundary is 36 degrees S. (i.e., 54 degrees South Polar distance) and western boundary 7 degrees W. (i.e., 173 degrees from the antimeridian of Greenwich) will be numbered 54-173.

9. The local aeronautical unit sheet shall show, as far as the date is known, the following:—

(a) *Within the limiting Meridians and Parallels.*—Twenty-minute projection grid; roads divided into two classes according to their relative visibility from the air; railways of all kinds, cities and towns in outline and the plan of the principal public roads crossing them (villages similarly if practicable, otherwise their positions indicated); principal features of the surface water system; woodlands and other areas unsuitable for landing, aerodromes, hangars for airships, plants for balloon inflation, permanent landing places on ground and water, aeronautical ground marks (beacons and fixed navigational lights), marine lighthouses (height, range at sea level, colour and character of the light); wireless stations, meteorological stations, overhead electric power lines, remarkable objects, national frontiers, prohibited areas, principal air routes, names of important bodies of water, towns, and important villages: the topographical relief by shading and figures indicating heights, the most important of which to be surrounded by an oval ring as 712.

(b) *Outside the limiting Meridians and Parallels.*—A title, consisting of the name designating the locality and the index numbers of the sheet; a border scale graduated to minutes; the names of the neighbouring sheets; latitude, South Polar distance, old and new notation of longitude (see paragraph 7); scale of kilometres; legend of symbols in English or French and in the language of the country publishing the map; magnetic variation diagram; key map showing abridged numbers of the sheet concerned and the eight surrounding sheets; frontiers and the names of the countries, parts of which are embraced by the key map; publisher's name and date of publication.

10. The forms of the general and local maps, titles, marginal notations, diagrams, and legends, shall be as shown by the accompanying illustrations.



Arrangement of mark for south half of unit sheet. The short sides of the frame shall be oriented true north-south.

Arrangement of mark for north half of unit sheet having the same orientation of short sides.

11. The general and local aeronautical maps and guide books of the areas traversed by the most important routes which may be established by international agreement shall be prepared first.

NOTE.—On account of the inadequacy of the usual methods of topographic mapping for making aeronautical maps, it is strongly recommended that steps be taken to survey from the air the areas along the most important international routes. Such surveys would furnish indispensable information regarding the features necessary to be shown on the maps the aviator is to use.

II.—UNIVERSAL SYSTEM OF GROUND MARKS.

7. All ground marks shall conform with the scheme of numbering adopted for the unit sheets of the local international aeronautical maps.

For this purpose each mark shall show (see the diagrams):—

(a) The abridged number which designates the sheet within which it lies;

(b) An open rectangle, whose short sides shall be oriented north-south; the frames shall be open towards the opposite half of the unit sheet;

(c) A dot indicating the approximate position of the mark on the north or south half of the corresponding unit sheet.

The numbers shall be placed close to the frame at the top, bottom or sides, but not inside.

Where marks are placed so close to each other as to admit of possible confusion, the round dot may be replaced by a square, triangular or star-shaped dot.

It is recommended that the minimum dimensions of the marks be those indicated in the sketches.

2. Special attention shall be given to the distribution of marks along chosen international routes.

NOTE.—Steps to establish suitable marks for landing at night shall be eventually taken, in accordance with the decision of the International Commission for Air Navigation.

ANNEX G.

Collection and Dissemination of Meteorological Information

[This section is new.]

1. Nature and object of meteorological information to be furnished by Contracting States:—

(A) "Statistical" is required for the purpose of indicating the degree of safety and convenience of different routes or aerodromes for different types of aircraft.

It consists of:—

(a) Analysis and summaries of past meteorological records.

(b) Summaries of current observations.

(B) "Current" is required for the purpose of:—

(a) Keeping a current record of the weather.

(b) Making forecasts.

It consists of:—

1. The results of daily observations.

2. Lists of active stations at which these observations are taken.

(C) "Forecasts" are for the purpose of telling all concerned when and where flying is possible and the best conditions for the same. They are statements of conditions anticipated:—

(a) "Short period" during the next three or four hours.

(b) "Normal" during the next 20 to 30 hours.

(c) "Long period" during the next two or three days.

(d) "Route" for particular region or route during the next six hours.

2. Methods and times of furnishing the different types of information:—

(A) "Statistical" is furnished by Central Meteorological Offices for general information.

(a) Analysis and summaries of past records—by the publication of special handbooks, giving averages, frequencies and extremes of the principal meteorological elements, together with charts and diagrams; prominence to be given to meteorological conditions of areas known to have special meteorological peculiarities.

(b) Summaries of current observations—by the monthly publication of the information obtained each month.

(B) "Current" is furnished by meteorological offices to meteorological offices.

(a) Results of daily observations—telegraphically by:—

1. Regular reports at fixed hours (see Appendix I) and

2. By special reports at intermediate times when requested (see Appendix II).

(b) Lists of stations whenever necessary, to keep other countries informed where observations are being taken, giving also local and topographical details affecting weather conditions at each station.

(c) "Forecasts" are furnished by Meteorological Offices for general information by publication in the public Press, telegraphically to other countries if required, or any other, the best, means to bring them to the notice of these requiring them (see Appendix III).

APPENDIX I.—REGULAR REPORTS.

These are of two kinds:—

1. Individual station reports.

2. Collective station reports.

1. Individual station reports are the results of observations of individual stations, taken at 0700, 0700, 1300, and (1800 or) 1900 G.M.T. The reports are made as soon as the observation has been taken and are rendered to a central collecting station or office: where reports for only two of these hours are possible or sufficient, the hours should be separated by an interval of twelve hours. (It is recommended that the standard hours be changed to 0300, 0900, 1500 and 2100 G.M.T. by international agreement.)

Reports will give information on the following, whenever possible:—

1. Wind.

2. Pressure.

3. Temperature and humidity.

4. Fog and visibility.

5. Clouds.

6. Precipitation.

7. Thunderstorms, hurricanes, tornadoes, dust-storms.

8. Other weather phenomena.

9. State of sea.

And also on upper air currents and upper air temperature and humidity, from stations where facilities are available for observation.

Reports will be made in the general form and in the codes given in Appendix IV.

2. Collective reports are a collection of the individual reports received by a central station or office and transmitted to other central offices. They are of three classes:—

Class 1.—The central office in this case is usually the main office of a country; it transmits its reports, within 1½ hours of the time the observations are taken at the individual stations, to all main offices of other countries within a radius of 1,500 kilometres.

Class 2.—These are reports made for the purpose of giving countries over 1,500 kilometres distant information essential to making their own forecasts. The central office is that of a selected State which possesses a high-power wireless station capable of worldwide ranges (minimum range 3,000 kilometres). The report is made within three hours of the observations, and is a collection of reports selected from the Class I reports and abridged (see Appendix IV). It should include a forecast of conditions in the country of origin.

Class 3.—These are local reports made by local centres to other local centres (any within 500 kilometres). The report is a collection of reports, selected from the Class I reports from stations in the vicinity and abridged (see Appendix IV.). It is made within 30 minutes of the time of observation.

APPENDIX II.—SPECIAL REPORTS.

Special reports give the results of continuous observations at aerodromes having meteorological stations on recognised air routes. They are to be rendered within thirty minutes of a request from a central office on a specified aerodrome on the route. The maximum distance from which these reports will be required is 500 kilometres. The requests may take the form of a demand for hourly reports.

The reports are rendered by telephone or wireless, and may be from one country to another in the case of an international air route. The reports, when made by telegram, will be in the form and code given in Appendix IV.

APPENDIX III.—FORECASTS.

Short-period forecasts covering three to four hours will give a statement of the anticipated conditions of cloud, weather, surface wind, and visibility, together with direction and speed of wind at heights of 1,000 and 2,000 metres, and an estimate of meteorological fitness for different types of aircraft.

Normal forecasts for twenty to thirty hours will give similar information but in more general terms.

Long-period forecasts give a general statement of the prospects for the next two or three days.

Route forecasts are made twice daily by central offices from information received from individual stations and will give a statement of conditions anticipated in the different regions or routes of the country for about six hours ahead.

APPENDIX IV.

[This deals with the general form in which reports are to be rendered and codes for their transmission, together with the meteorological symbols and codes for every conceivable weather condition. Doubtless this technical information will eventually be embodied in a booklet which will be distributed to those concerned.]

ANNEX H.

Customs

GENERAL PROVISIONS.

1. Any aircraft going abroad shall depart only from aerodromes specially designated by the customs administration of each contracting State, and named "customs aerodromes."

Aircraft coming from abroad shall land only in such aerodromes.

2. Every aircraft which passes from one State into another is obliged to cross the frontier between certain points fixed by the contracting States. These points are shown on the aeronautical maps.

3. All necessary information concerning customs' aerodromes within a State, including any alterations made to the list and any corresponding alterations necessary on the aeronautical maps and the dates when such alterations become valid, and all other information concerning any international aerodromes which may be established, shall be communicated by the States concerned to each other and to the International Commission for Air Navigation, which shall notify such information to all of the contracting States. The contracting States may agree to establish international aerodromes at which there may be joint customs services for two or more States.

4. When, by reason of a case of *force majeure*, which must be duly justified, an aircraft crosses the frontier at any other point than those designated, it shall land at the nearest customs aerodrome on its route. If it is forced to land before reaching this aerodrome it shall inform the nearest police or customs authorities.

It will only be permitted to leave again with the authorisation of these authorities, who shall, after verification, stamp the log book and the manifest provided for in paragraph 5; they shall inform the pilot of the customs aerodrome where he must necessarily carry out the formalities of customs clearance.

5. Before departure, or immediately after arrival, according to whether they are going to or coming back from a foreign country, pilots shall show their log books to the authorities of the aerodrome and, if necessary, the manifest of the goods and supplies for the journey which they carry.

6. The manifest is to be kept in conformity with the attached form No. 1. The goods must be the subject of detailed declarations in conformity with the attached form No. 2, made out by the senders.

Every contracting State has the right to prescribe for the insertion, either on the manifest or on the customs declaration of such supplementary entries as it may deem necessary.

7. In the case of an aircraft transporting goods the customs officer, before departure, shall examine the manifest and declarations, make the prescribed verifications and sign the log book as well as the manifest. He shall verify his signature with a stamp. He shall seal the goods or sets of goods, for which such a formality is required.

On arrival the customs officer shall ensure that the seal is unbroken, shall pass the goods, shall sign the log book and keep the manifest.

In the case of an aircraft with no goods on board, the log book only shall be signed by the police and customs officials.

The fuel on board shall not be liable to customs duties provided the quantity thereof does not exceed that needed for the journey as defined in the log book.

8. As an exception to the general regulations, certain classes of aircraft, particularly postal aircraft, aircraft belonging to aerial transport companies regularly constituted and authorised, and those belonging to members of recognised touring societies not engaged in the public convenience of persons or goods, may be freed from the obligation of landing at a customs aerodrome and authorised to begin or end their journey at certain inland aerodromes appointed by the customs and police administration of each State, at which customs formalities shall be complied with.

However, such aircraft shall follow the normal air-route, and make their identity known by signals agreed upon as they fly across the frontier.

REGULATIONS APPLICABLE TO AIRCRAFT AND GOODS.

9. Aircraft landing in foreign countries are in principle liable to customs duties if such exist.

If they are to be re-exported, they shall have the benefit of the regulations as to permit by bond or deposit of the taxes.

In the case of the formation between two or more countries of the Union of touring societies, the aircraft of the said countries will have the benefit of the regulations of the "Tryptique."

10. Goods arriving by aircraft shall be considered as coming from the country where the log book and manifest have been signed by the customs officer.

As regards their origin and the different customs régimes, they are liable to the regulations of the same kind as are applicable to goods imported by land or sea.

11. With regard to goods exported in discharge of a temporary receiving or bonded account or liable to inland taxes, the senders shall prove their right to send the goods abroad by producing a certificate from the customs of the place of destination.

AIR TRANSIT.

12. When an aircraft to reach its destination must fly over one or more contracting States, without prejudice to the right of sovereignty of each of the contracting States, two cases must be distinguished:—

(1) If the aircraft neither sets down nor takes up passengers or goods, it is bound only to keep to the normal air route and make itself known by signals when passing over the points designated for such purpose.

(2) In other cases, it shall be bound to land at a customs aerodrome and the name of such aerodrome shall be entered in the log book before departure. On landing, the customs authorities shall examine the papers and the cargo, and take, if need be, the necessary steps to ensure the re-exportation of the craft and goods or the payment of the dues.

The provisions of paragraphs 9 (2) are applicable to goods to be re-exported. If the aircraft sets down or takes up goods, the customs officer shall verify the fact on the manifest, duly completed, and shall affix, if necessary, a new seal.

VARIOUS PROVISIONS

13. Every aircraft during flight, wherever it may be, must conform to the orders from police or customs stations and police or customs aircraft of the State over which it is flying.

14. Customs officers and excise officials, and generally speaking, the representatives of the public authorities, shall have free access to all starting and landing places for aircraft; they may also search any aircraft and its cargo to exercise their rights of supervision.

15. Except in the case of postal aircraft, all unloading or throwing out in the course of flight, except of ballast, may be prohibited.

16. In addition to any penalties which may be imposed by local law for infringement of the preceding regulations, such infringement shall be reported to the State in which the aircraft is registered, and that State shall suspend,

for a limited time or permanently, the certificate of registration of the offending aircraft.

17. The provisions of this Annex do not apply to military aircraft visiting a State by special authorisation (Articles 31, 32 and 33 of the Convention), nor to police and customs aircraft (Articles 31 and 34 of the Convention).

[The document concludes with the form of manifest or general declaration of cargo, showing how particulars relating to machine, commander, goods, &c., are to be set forth. Also the form of the customs declaration is shown.]



Casualties

Lieut.-Col. A. C. BODDAM-WHETHAM, D.S.O., 4th Battn. Argyll and Sutherland Highlanders and R.A.F., of Earlscliffe, Folkestone, who was killed on June 22, 1919, at the age of 35, in an aeroplane accident in Egypt, was the eldest son of the late J. W. Boddam-Whetham, late of Kirklington Hall, Notts, and Mrs. Boddam-Whetham.

Lieut. C. R. WENTWORTH KNIGHT, R.A.F., who was killed in action at Topsa on June 21, at the age of 21, after continuous service in France and elsewhere since January, 1915, was the only son of Mr. and Mrs. W. H. Knight, of Towns End House, Limington, Ilchester.

Lieut.-Col. CHARLES FREDERICK POLLOCK, O.B.E., A.F.C., late R.A.F., died on July 17, aged 53.

Sec. Lieut. DONALD C. TUCKER, R.F.C., previously reported missing on March 24, 1918, now officially reported killed in action on that date, at the age of 19, was the youngest son of Frank J. Tucker and Mrs. Tucker, Durley Park House, Keynsham, Somerset.

Married

Maj.-Gen. EDWARD B. ASHMORE, C.B., C.M.G., M.V.O., formerly Royal Artillery, now R.A.F., commanding the London Air Defences, was married on July 17 at Holy Trinity Church, Prince Consort Road, S.W., to Miss BETTY PARSONS, daughter of the Rev. F. W. Parsons, vicar of Tandridge, Oxted, Surrey.

Lieut. CHARLES FREDERIC BARTON, R.A.F., of Toronto, Canada, was married on July 5 at Woodton Parish Church, to MARY LETITIA DRIFFIELD LEE, younger daughter of the Rev. Frederick and Mrs. Lee, of Woodton Rectory, Bungay.

Maj. GEORGE PURVIS BULMAN, O.B.E., R.A.F., only son of the late W. W. Bulman, of Alexandria, Egypt, and Mrs. Purvis Bulman, Queen's Club Gardens, was married on July 16, at Christ Church, Sunderland, to EMMELINE PRESTON, youngest daughter of Mr. and Mrs. G. P. FAIRMAN.

CHARLES NOEL GREGORY DORE (R.A.F.), son of the late S. Lammas Dore, and of Mrs. S. Lammas Dore, of Pinner Hill, Middlesex, was married on July 18 at Holy Trinity Church, Paddington, to EVELYN EMILY, daughter of the late Duncan GELLION, and of Mrs. Duncan Gellion, of 2, Orsett Terrace, Hyde Park, W.

Capt. H. S. EVAMY, R.A.F., was married on July 9 at St. Matthias' Church, Torquay, to DOROTHY JEANETTE, eldest daughter of Mr. and Mrs. C. J. HANNAFORD, of Chulmleigh and Torquay, Devon.

Capt. EUGENE COURTENAY PERRIN, O.B.E., 4th Bn. Cheshire Regt. and R.A.F., elder son of John E. Perrin, of Hoyle, Cheshire, and Mrs. Perrin, was married on June 30 at Lillington Parish Church, to KATHERINE ARTHUR MARY VIOLET, widow of Capt. C. A. GRAZEBROOK, K.R.R.C., and daughter of the late Arthur Hickman and Mrs. Morgan, of Radlett, Herts.

Maj. C. F. A. PORTAL, D.S.O., M.C., R.A.F., son of Mr. E. R. Portal, formerly Master of the Craven Hounds, of Eddington House, Hungerford, was married on July 21, at Denton, Grantham, to Miss JOAN MARGARET WELBY, third and youngest daughter of Sir Charles Glynn Welby and Lady Maria Welby, of Denton Manor.

Capt. DENIS C. W. SANDERS, A.F.C., R.A.F., eldest son of Dr. and Mrs. Gordon Sanders, Villa Martha, Cannes, France, was married on July 23, at St. Paldred's, North Berwick, to NANCY M. G., widow of the late Ivan B. SPOT, Lieut., 1st Battn., The Queen's Own Cameron Highlanders, and daughter of Sir George and Lady Berry, Drumsheugh Gardens, Edinburgh, and King's Knoll, North Berwick.

Lieut. WILLIAM ABDY SYCAMORE, Lieut. R.E. (T.F.), only son of Capt. Edward Sycamore, R.A.F., and Mrs. Sycamore, of Brightlingsea, Essex, was married on July 23, at Wadsley Parish Church, to KATHERINE DAVIDSON, only daughter of the late Mr. and Mrs. Frank CLARENCE.

Lieut. W. M. N. TOLFREE, R.A.F., youngest son of Mr. and Mrs. W. H. Tolfree, of Winsford, Cheshire, was married on June 26 at Kast-el-Nil Garrison Church, Cairo, to FRANCES WINIFRED, only daughter of Mr. and Mrs. F. R. NASH, of Guildford, Surrey.

To be Married

The engagement is announced between Capt. J. R. FRANKISH, M.B.E., R.A.F., eldest son of the late Mr. and Mrs. W. J. Frankish, of Kinnington House, Lincolnshire, and DOROTHY EDITH, elder daughter of Jeffry WHITEHEAD and Mrs. Whitehead, of Croydon, Surrey.

A marriage has been arranged, and will take place on Wednesday, September 10, at Bromsgrove Parish Church, between Capt. H. E. JUDGE, R.A.F., and OLIVETTE, daughter of Mrs. EADIE, Rigby Hall, Bromsgrove, Worcestershire.

The engagement is announced between Capt. HUGH PUGHE LLOYD, M.C., D.F.C., Croix de Guerre, R.A.F., second son of Mr. and Mrs. L. T. Lloyd, of Alfrick, Worcester, and KATHLEEN, youngest daughter of Maj. R. T. MEADOWS, D.S.O., and Mrs. Meadows, Dunheved, Saltash, Cornwall.

The engagement is announced between Capt. MAUDUIT, 7th Dragoon Guards and R.A.F., eldest son of Lieut.-Col. Mauduit, of 57, Sloane Street, and Mrs. Mauduit, and IRENE, daughter of the late Capt. A. H. BROOKSBANK, 19th Hussars, and Mrs. Brooksbank, of Middleton Hall, Yorkshire.

The engagement is announced between Capt. MITTON, Lincolnshire Regt., and R.A.F. only son of Mr. and Mrs. W. H. Mitton, of Sunnyside, Sleaford, and DAPHNE YSEULT, daughter of Baron DE BELABRE, French Consul, Newcastle-on-Tyne, and great-granddaughter of Admiral Sir John West, G.C.B.

The engagement is announced between Capt. BERNARD A. TAYLOR, R.A.F., only son of Mr. and Mrs. A. E. Taylor, of Crawley, Sussex, and KITTY, third daughter of the late Capt. H. F. LEICESTER LOCOCK and Mrs. Leicester Locock, of Pook's Hill, Angmering, Sussex.

Items

Maj.-Gen. Sir HUGH TRENCHARD (Chief of the Air Staff), Brig.-Gen. C. L. LAMBE (Director of Equipment, R.A.F.), and Col. A. M. LONGMORE, R.A.F., had the honour of being received by His Majesty at an audience at Buckingham Palace on July 25.

Mr. THOMAS KEPPEL NORTH, O.B.E., of Barnes Cray, Crayford, Kent, superintendent of Messrs. Vickers, Ltd., Crayford Works, since 1913, who died on February 10, intestate, has left property of the value of £19,629.

General Sykes Honoured

MAJ.-GEN. F. H. SYKES, Controller-General of Civil Aviation, while attending a meeting of the International Commission in Paris, was presented by Maj. Duval, on behalf of President Poincare, with the Cross of the Legion of Honour.

Exploring the Damascus-Bagdad Route

A MESSAGE from Cairo states that a number of British officers, equipped with ten Ford cars and a Handley-Page aeroplane have left Cairo to pioneer an aeroplane route from Damascus to Bagdad.

THE ROYAL AIR FORCE

London Gazette, July 18

Royal Air Force

The following temporary appointment is made at the Air Ministry:—
Staff Officer, 3rd Class (P.).—Lieut. (actg. Capt.) D. F. Cox; Feb. 19, and to retain the actg. rank of Capt. till April 30.

Group Commander (graded as Col. Staff).—Lieut. Col. C. E. H. Rathbone, D.S.O.; April 25, vice Lieut. Col. H. A. Williamson, C.M.G.

Staff Officer, 2nd Class (Air).—Capt. G. S. Trewin, A.F.C.; July 6.
Staff Officer, 3rd Class (P.).—Sec. Lieut. (actg. Lieut.) J. M. McEntegart; Dec. 20, and to be actg. Capt. till April 30 (substituted for the notification in the *Gazette* of Jan. 21).

The notification in the *Gazette* of June 20 concerning Lieut. G. H. Godfrey is cancelled.

Flying Branch

Capt. C. E. H. C. Macpherson ceases to be graded for purposes of pay and allowances of Maj. (A.); May 31.

Capt. H. C. Irwin to be graded for purposes of pay and allowances as Capt. while employed as Capt. (A.) and (S.); May 1.

Lieuts. to be graded for pay and allowances as Capt. while employed as Capt. (K.B.).—W. C. Knight, C. K. Osborn; May 1.

J. A. Sykes (Lieut., Gordon Highrs.) is granted a temp. commn. as Sec. Lieut. (A.); June 28, 1918, and to be Hon. Lieut.

A. Jenart (Sec. Lieut., York and Lancs. R.) is granted a temp. commn. as Sec. Lieut. (O.); Oct. 25, 1918.

Lieut. D. S. Buchanan (Lieut., I.A.R.O.) relinquishes his commn. on revision to I.A.R.O.; July 18.

The following relinquish their commns. on ceasing to be employed:—

Lieut.-Col. R. Bell-Irving (Maj. (Temp. Lieut.-Col.), Brit. Col. R.); April 9.

Lieut. V. O. Lonsdale (Lieut., R.H. and R.F.A.); June 30. Lieut. F. V. Heakes (Lieut., Cent. Ont. R.); July 3. Lieut. L. Rimmer (Lieut., W. Ont. R.); July 4. Lieut. W. C. Brewer (Lieut., W. Ont. R.); July 6. Capt. D. Carruthers (Capt., Can. A.S.C.), Lieut. H. G. Clements (Lieut., Alberta R.), Lieut. K. B. Conn, D.F.C. (Lieut., Cent. Ont. R.); Lieut. G. M. Guillon (Lieut., Quebec R.); Lieut. H. L. Holland (Lieut., Can. Cyclist Corps), Lieut. C. McEwen, M.C., D.F.C. (Lieut. (actg. Capt.) Sask. R.), Lieut. J. C. McKeever (Lieut., Cent. Ont. R.); Lieut. P. B. O. L. B. Morency (Lieut., Quebec R.), Lieut. J. L. M. White, D.F.C. (Lieut. (actg. Capt.), Can. M.G.C.), Sec. Lieut. (Hon. Lieut.) J. Whitford (Lieut., Manitoba R.); July 7. Lieut. R. L. Coote (Lieut., W. Ont. R.), Lieut. S. M. Gibson (Lieut., Manitoba R.), July 8. Sec. Lieut. (Hon. Capt.) F. G. Godsell (Lieut., Gloster R., T.F.), Lieut. S. B. Plummer (Lieut., E. Ont. R.), Lieut. G. L. Shepherd (Lieut., W. Ont. R.); July 8.

(Then follow the names of 394 officers who are transfd. to the Unemployed List under various dates. We regret that owing to great pressure on our space it is impossible to reprint this portion of the List.—Ed.)

Capt. B. S. Wemp, D.F.C., relinquishes his commn. on account of ill-health contracted on active service, and is granted rank of Maj.; June 13.

The following Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—S. C. Shepherdson (contracted on active service); June 19. R. G. Pratt; June 27 (substituted for notification in *Gazette* April 8. J. W. Baillie, F. R. C. Cobbald (caused by wounds), R. A. Crabtree (contracted on active service); July 4. F. C. A. Thorpe (caused by wounds), C. G. Wood (contracted on active service); July 7. Lieut. W. G. R. Bailes (caused by wounds); July 11.

Lieut. H. L. Yates resigns his commn.; June 18 (substituted for notification in *Gazette* May 13).

Lieut. G. G. L. Blake, D.F.C., D.C.M., to take rank and precedence as if his appointment as Lieut. bore date March 17.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—C. E. Robinson (caused by wounds); July 4. G. V. Straker; July 10 (substituted for notification in *Gazette* June 6).

Sec. Lieut. C. Oldfield is removed the Service for absence without leave; Jan. 26.

The notification in *Gazette* March 28 concerning Sec. Lieut. J. M. Scott is cancelled.

The notification in *Gazette* May 30 concerning Lieut. L. D. Brown is cancelled.

The notification in *Gazette* June 3 concerning Lieut. W. E. Watt is cancelled (the notification in *Gazette* April 4 to stand).

The notification in *Gazette* June 17 concerning Lieut. C. C. G. Girvan is cancelled.

The notification in *Gazette* June 24 concerning Sec. Lieuts. T. Mundy and E. A. Murray is cancelled.

Administrative Branch

Lieut.-Col. G. Hilton, D.C.M., to be Lieut.-Col. from (S.O.); July 6.

Lieut. A. B. Monk to be actg. Capt. while employed as Capt., from Nov. 30, 1918, to April 30 (substituted for notification in *Gazette* May 23).

Lieuts. to be graded for purposes of pay and allowances of Capt. while employed as Capt. (S.).—S. Currington, M.B.E., R. Elphick, (Hon. Capt.) L. V. Popkiss; May 1.

Lieuts. (A.) to be Lieuts.:—J. H. Taylor; May 6. H. A. Zinn; July 8.

Lieut. G. A. F. Hudson to be Lieut., from (S.); July 25 (substituted for notification in *Gazette* of July 15).

Sec. Lieuts. to be Lieuts.:—G. D. Ashby; Oct. 20, 1918. (Actg. Capt.) G. T. Armitage; Dec. 17, 1918.

The following are granted temp. commns. as Sec. Lieuts.:—C. Jackson; Nov. 21, 1918. C. J. Elliott; July 14.

The following relinquish their commns. on ceasing to be employed:—Lieut. S. P. Briggs (Lieut., Northants R.); June 16. Sec. Lieut. (Hon. Capt.) D. M. Berry (Capt., R. Fus.); June 25.

(Then follow the names of 47 officers who are transfd. to the Unemployed List under various dates.)

Lieut. (actg. Capt.) C. E. Morgan relinquishes his commn. on account of ill-health, and is granted the rank of Capt.; May 25, 1918 (substituted for notification in the *Gazette* of May 24, 1918).

Lieut. E. Croghan relinquishes his commn. in order to resume his medical studies; July 1.

Lieut. G. C. Levick (K.R.R.C.) relinquishes his commn. on account of ill-health contracted on active service; July 14.

Sec. Lieut. J. C. Child relinquishes his commn. on account of ill-health, and is permitted to retain his rank; Dec. 23, 1918 (substituted for notification in the *Gazette* of Nov. 12, 1918).

The notifications in the *Gazette* of May 13 and July 4 concerning Lieut. H. W. Piper are cancelled.

The notification in the *Gazette* of April 25 concerning Sec. Lieut. D. Miller is cancelled.

The notification in the *Gazette* of May 6 concerning Maj. J. M. Boyd, M.B.E., is cancelled.

Technical Branch

Lieut. H. W. Prockter to be graded for purposes of pay and allowances of Capt., whilst employed as Capt., Grade (A.); May 1.

Lieut. J. R. Coulthard to be graded for purposes of pay and allowances of Capt. whilst employed as Capt., Grade (B.); May 1.

Sec. Lieut. (actg. Capt.) E. P. Dampier to be Sec. Lieut., Grade (B.), from (Ad.), and to retain the actg. rank of Capt. whilst employed as Capt.; Oct. 1, 1918.

Lieuts. to be actg. Capt. without pay and allowances of that rank whilst employed as Capt., Grade (B.):—W. F. Mytton (substituted for notification in the *Gazette* of March 21); J. M. B. E. St. Amory (substituted for notification in the *Gazette* of March 21); Dec. 1, 1918.

Lieuts. to be Lieuts., Grade (A):—E. R. V. Collett, from (O); Nov. 1, 1918. J. S. Stevenson, from (Ad.); Dec. 15, 1918.

C. N. Smith (Lieut., R. Welsh Fus.) is granted a temp. commn. as Sec. Lieut., Grade (B); May 22, 1918, and to be Hon. Lieut.

(Then follow the names of 41 officers who are transfd. to the Unemployed List under various dates.)

Sec. Lieut. J. Penrose relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; June 24.

The initials of Lieut. N. V. Harle are as now described, and not "H. V." as stated in *Gazette* May 2.

The date of appointment of Sec. Lieut. T. Mundy and Sec. Lieut. F. A. Murray is March 8, and not May 8, as stated in *Gazette* May 23.

The notification in *Gazette* May 16 concerning Lieut. E. R. V. Collett is cancelled.

The notification in *Gazette* Dec. 3, 1918, concerning C. Jackson is cancelled.

Medical Branch

Maj. F. H. Stephens (Staff Surgeon, R.N.) relinquishes his commn. on reverting to R.N. Medical Services; Feb. 11 (substituted for notification in *Gazette* March 22).

Four officers transfd. to Unemployed List.

The notification in *Gazette* Feb. 14 concerning Capt. A. E. McCulloch is cancelled.

Chaplains' Branch

Rev. R. Hall is granted the relative rank of Col. while employed as Principal Chaplain (Wesleyan); May 1 (substituted for notification in *Gazette* May 20 granting the relative rank of Lieut.-Col.).

(Then follow the names of 266 Overseas Cadets granted temp. commns. as Sec. Lieuts. and 15 Cadets granted hon. commns. as Sec. Lieuts.)

Col. (actg. Brig.-Gen.) K. Wigram, C.B., D.S.O. (Bt.-Col. (T.) Brig.-Gen.) Indian Army, relinquishes his commn. on ceasing to be employed; April 10.

The following Temp. Hon. Lieuts. relinquish their commns. on ceasing to be employed:—W. Naylor, T. T. Sawday; June 16. H. B. Peiree; July 17.

London Gazette, July 22

The following temporary appointment is made:—

Deputy Director (Qrmr. Servs.).—Col. F. C. Halahan, C.M.G., D.S.O. M.V.O.; July 1, vice Lieut.-Col. (actg. Col.) A. Fletcher, C.M.G., C.B.E., M.C.

The following temporary appointments are made:—

Commander.—Maj.-Gen. J. F. A. Higgins, C.B., D.S.O., A.F.C., July 22, and to be graded for purposes of pay and allowances as Maj.-Gen. whilst so employed.

Brigadier-General (Staff).—Lieut.-Col. A. L. Godman, C.M.G., D.S.O., to be graded for purposes of pay and allowances as Brig.-Gen., Staff, May 1, whilst employed as Chief Staff officer of an area.

Group Commanders (Graded as Cols., Staff).—Lieut.-Col. (actg. Col.) R. H. Clark-Hall, D.S.O.; July 16. Lieut.-Col. T. C. R. Higgins, C.M.G.; July 1.

Staff Officer, 1st Class (P.).—Maj. H. A. Mitchell, O.B.E.; May 23.

Staff Officer, 2nd Class (T.).—Maj. N. F. D. Buckeridge; May 31, vice Lieut. F. Jewell.

Staff Officers, 3rd Class (P.).—Capt. L. E. Middleton; July 20. Sec. Lieut. G. D. Ashby; April 23, and to be actg. Capt. till April 30. (T.).—Lieut. J. W. Sawyer; May 23. Sec. Lieut. W. Bye; Feb. 2, and to be actg. Capt. till April 30. Sec. Lieut. H. Norrington; March 10, and to be actg. Capt. till April 30.

Air Attaché (Madrid).—Maj. (actg. Lieut.-Col.) W. D. S. Sanday, D.S.O., M.C.; May 2, and to retain the actg. rank of Lieut.-Col. whilst so employed.

Flying Branch

Maj. R. S. Robinson to be actg. Lieut.-Col. whilst employed as Lieut.-Col. (A. and S.), from April 1, 1918, to April 30 (substituted for the notification in the *Gazette* of Aug. 6, 1918).

Capt. H. G. White to be actg. Maj. whilst employed as Maj. (A.); May 1.

Capt. S. T. L. Greer, A.F.C., to be graded for purposes of pay and allowances as Maj. while employed as Maj. (A.); May 11.

Capt. H. G. Travers, D.S.C., to be graded for purposes of pay and allowances as Maj. while employed as Maj. (A. and S.); May 1.

Capt. W. G. Pigott relinquishes the grading for purposes of pay and allowances as Maj. (K.B.); May 5.

Lieuts. to be actg. Capt. while employed as Capt. (A.):—J. Boyd, D.F.C. (from Oct. 14, 1918, to Nov. 21, 1918); M. J. Langley; May 31.

Lieut. C. N. H. Bilney to be actg. Capt. while employed as Capt. (A. and S.); May 31.

Lieut. O. R. Gayford, D.F.C., to be actg. Capt. while employed as Capt. (O.); May 31.

Capt. to be graded for purposes of pay and allowances of Capt. while employed as Capt. (A'ship):—R. E. V. Jelliffe; July 2, 1918, to Jan. 31.

A. J. H. MacColl; May 22, 1918, to Jan. 31.

Lieuts. to be graded for purposes of pay and allowances as Capt. while employed as Capt. (A.):—N. C. Buckton, F. H. Davies, C. J. S. Dearlove, G. E. Gibbs, M.C., W. J. F. Harvey, D.F.C., G. L. Hobbs, M.C., C. L. King, M.C., D.F.C., H. F. Nicholls, D.F.C., A. D. K. Perkins; May 1.

Lieuts. to be graded for purposes of pay and allowances as Capt. while employed as Capt. (A. and S.):—G. H. Boyce, E. J. L. Hope; May 1.

Sec. Lieut. H. C. T. Gompertz to be Lieut.; Dec. 23, 1918.

Sec. Lieuts. to be actg. Lieuts. while employed as Lieuts.:—W. W. Langdon (A.), J. H. McCaghey (S.), G. W. McDougall (A.), H. G. Pratt (O.), D. E. Spalton (O.); May 31.

T. C. Beeken (Sec. Lieut., W. Riding R.) is granted a temp. commn. as Sec. Lieut. (S.); Oct. 19, 1918.

P.F.O. A. K. Smithells (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (A.); July 2, 1918.

The following relinquish their commns. on ceasing to be employed :—
 Sec. Lieut. (Hon. Capt.) A. W. B. Becher (Capt., K.O.Y.L.I.); March 20.
 Lieut. H. Holroyd (Lieut., Sask. R.); May 20. Capt. (Hon. Maj.) E. G.
 Joy (Maj., Cent. Ont. R.); May 31. Lieut. (Hon. Capt.) H. S. Quigley,
 M.C., D.C.M. (Capt., Can. Engrs.); July 3. Lieut. A. F. G. Clarke (Sec.
 Lieut., R.A.S.C.); July 4. Lieut. M. L. Doyle, D.F.C. (Capt., Quebec
 R.); Lieut. E. J. Mills (Lieut., Quebec R.); July 6. Lieut. A. E. de M.
 Jarvis, D.F.C. (Lieut., E. Ont. R.); Sec. Lieut. (Hon. Lieut.) J. E. Palmer,
 D.C.M. (Lieut., Can. M.G.C.); Lieut. W. L. Rutledge, M.M. (Lieut., Sask.
 R.); July 7. Capt. R. Duncan, M.C. (Capt., Sask. R.); July 8. Lieut.
 E. O. Houghton (Lieut., C. Ont. R.); July 10. Maj. R. W. Bruce (Capt.
 (Temp. Maj.), Sask. R.); July 14. Lieut. E. Mills (Sec. Lieut., R.H. and
 R.F.A.); July 23.

(Then follow the names of 274 officers who are transfd. to the Unemployed
 List under various dates. We regret that owing to pressure on our space
 it is impossible to reprint this portion of the List.)

Maj. G. R. Elliott (Capt., 3rd Dn. Gds.) resigns his commn., and is per-
 mitted to retain his rank; July 22.

Capt. A. W. Williams, D.F.C., relinquishes his commn. on account of ill-
 health contracted on active service, and is permitted to retain his rank;
 July 9.

Capt. G. Chadwick (Maj., R.) relinquishes his commn. on account of
 ill-health contracted on active service; July 14.

The following Lieuts. relinquish their commns. on account of ill-health,
 and are permitted to retain their rank :—E. I. Sutcliffe (caused by wounds);
 May 20. J. H. F. Baker; July 11. C. F. Eckel; July 20 (substituted for
 the notification in *Gazette* March 4).

Lieut. L. C. Galloway relinquishes his commn., being physically unsuited
 for the duties of pilot and observer, and is permitted to retain his rank;
 June 6 (substituted for the notification in *Gazette* Nov. 12, 1918).

Lieut. C. P. Tiptaft (Conn. Rang., T.F.) relinquishes his commn. on account
 of ill-health; July 20.

Sec. Lieut. W. C. Saville relinquishes his commn. on account of ill-health
 contracted on active service, and is permitted to retain his rank; June 5
 (substituted for the notification in *Gazette* Jan. 17).

Sec. Lieut. W. Coutts to take rank and precedence as if his appointment
 as Sec. Lieut. bore date Dec. 2, 1918.

Sec. Lieut. H. J. Bateman to take rank and precedence as if his appoint-
 ment as Sec. Lieut. bore date Jan. 1.

The notification in the *Gazette* of Feb. 14 concerning Flight Cdt. T. C.
 Beeken is cancelled.

The notification in the *Gazette* of Feb. 21 concerning Capt. J. P. Ingle-
 field is cancelled.

The notification in the *Gazette* of March 21 concerning Lieut. J. Valentine
 is cancelled.

The notification in the *Gazette* of April 1 concerning Capt. C. O. F. Modin,
 D.S.C., is cancelled.

The notification in the *Gazette* of June 27 concerning Capt. W. R. Read,
 M.C., A.F.C., is cancelled. The notification in the *Gazette* of May 27 to
 stand.

The notification in the *Gazette* of June 27 concerning Sec. Lieut. T. C.
 Beeken is cancelled.

The notification in the *Gazette* of July 4 concerning Sec. Lieut. (Hon.
 Lieut.) P. H. West is cancelled.

Administrative Branch

Maj. L. A. Burrowes to be actg. Lieut.-Col. whilst employed as Lieut.-
 Col.; May 1.

Capt. H. A. Fordham to be Capt., from (S.O.); March 11.

Sec. Lieuts. to be actg. Capts. whilst employed as Capts. :—H. Gambier;
 May 1. (Hon. Lieut.) W. H. Hoile, from (T.); May 31.

Lieuts. to be graded for purposes of pay and allowances of Capts. whilst
 employed as Capts. :—E. R. W. Close; May 1. W. E. Berwick; July 5.

Lieuts. to be Lieuts. :—A. L. Kidd, from (O.); May 3. W. M. Long,
 from Unemployed List; July 1. L. A. Eggar, from (S.O.); July 5.

Sec. Lieuts. to be graded for purposes of pay and allowances of Capts.
 whilst employed as Capts. :—(Hon. Capt.) A. K. O. Cochrane, (Hon. Lieut.)
 E. Meynell, D.C.M.; May 1.

Sec. Lieuts. to be graded for purposes of pay and allowances of Lieuts.
 whilst employed as Lieuts. :—(Hon. Lieut.) A. Colling, A. Lindsay, R. Parker,
 R. H. Sturgeon; May 1.

Sec. Lieuts. (O.) to be Sec. Lieuts. :—R. E. Shears; April 17. I. B.
 Boyce; June 11.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed
 in rank as Sec. Lieuts. :—H. C. Bird (substituted for notification in *Gazette*
 of May 2), H. V. Hall; April 1, 1918.

The following relinquish their commns. on ceasing to be employed :—
 Sec. Lieut. P. C. Cooper (Sec. Lieut., Northants R.); April 20. Lieut. (Hon.
 Capt.) T. E. Gentles (Capt., Lab. Corps); June 21. Capt. L. J. Torrie
 (Capt., Ind. Army); June 25. Capt. L. G. G. Groves (Lieut., R.N.); July 8.

(Then follow the names of 54 officers who are transfd. to the Unemployed
 List under various dates.)

The following Sec. Lieuts. relinquish their commns. on account of ill-
 health, and are permitted to retain their rank :—W. R. Nichols; Jan. 15
 (substituted for notification in *Gazette* of Oct. 11, 1918). W. I. Parke, con-
 tracted on active service; July 4.

Sec. Lieut. W. C. Proberts resigns his commn. and is permitted to retain
 his rank; July 23.

The surname of Capt. H. Vyvyan-Robinson is as now described, and not
 H. V. Robinson, as stated in the *Gazette* of May 30.

The notification in *Gazette* of June 24 concerning Sec. Lieut. (actg. Lieut.)
 S. S. Vanderhook is cancelled.

The notification in *Gazette* of Jan. 24 concerning Sec. Lieut. J. R. Coult-
 hard is cancelled.

The notification in *Gazette* of March 7 concerning Sec. Lieut. J. P. Wardle
 is cancelled.

The notification in *Gazette* of April 25 concerning Lieut. E. D. Warburton
 is cancelled.

The notification in *Gazette* of May 9 concerning Lieut. G. M. Smith is
 cancelled.

The notification in *Gazette* of June 3 concerning Lieut. H. C. R. Milward
 is cancelled.

The notification in *Gazette* of July 15 concerning Capt. R. S. Lindsell,
 O.B.E., is cancelled.

The notification in *Gazette* of Oct. 18, 1918, concerning J. W. S. Appleton
 is cancelled.

Technical Branch.

Lieut.-Col. (actg. Col.) A. Fletcher, C.M.G., C.B.E., M.C., to be Lieut.-
 Col., Grade (B), from Dep.-Dir., and to relinquish the actg. rank of Col.;
 July 1.

Sec. Lieut. (Hon. Lieut.) O. C. Lees to be actg. Lieut.-Col., Grade (A),
 whilst specially employed; May 30.

Capt. F. Holloway, O.B.E., to be graded for purposes of pay and allow-
 ances of Maj. whilst employed as Maj., Grade (A); May 22.

Lieut. J. A. Atkinson to be actg. Capt. whilst employed as Capt., Grade
 (A), from June 1, 1918, to April 30.

To be graded for purposes of pay and allowances of Capts. whilst em-

ployed as Capts., Grade (A) :—Lieut. J. Y. de la C. Elliott, Lieut. H. F.
 Groves, Lieut. W. A. Hancock; Man 1. Sec. Lieut. E. T. W. Nockold;
 to May 30.

Sec. Lieut. J. R. Coulthard to be actg. Capt. whilst employed as Capt.,
 Grade (B), from Dec. 21, 1918, to April 30.

To be graded for purposes of pay and allowances of Capts. whilst em-
 ployed as Capts., Grade (B) :—Lieut. J. I. Thompson, Lieut. J. A. V. Welsh,
 Sec. Lieut. W. C. Titheradge; May 1.

Lieut. (Hon. Capt.) R. Godfrey to be Lieut., from (Ad.); April 22, 1918
 (substituted for notification in *Gazette* of Dec. 17, 1918).

Sec. Lieuts. to be actg. Lieuts. while employed as Lieuts., Grade (A) :—
 L. Freeborn, G. H. Winckworth; May 31.

Sec. Lieut. (Hon. Lieut.) J. L. Miles to be graded for purposes of pay and
 allowances as Lieut. while employed as Lieut., Grade (A); May 1.

Sec. Lieut. C. E. Kitchenside to be graded for purposes of pay and allow-
 ances as Lieut. while employed as Lieut., Grade (B); May 1.

Sec. Lieut. (Hon. Capt.) G. C. Clark to be Sec. Lieut. (Hon. Capt.), Grade
 (A), from Grade (B); Feb. 6 (substituted for notification in *Gazette* of April 1).

Sec. Lieut. J. K. Thomson to be Sec. Lieut., Grade (A), from Grade (B);
 March 14.

Sec. Lieut. M. P. Stoneham to be Sec. Lieut., Grade (A), from (Ad.), from
 Dec. 9, 1918, to Feb. 1.

Sec. Lieuts. to be Sec. Lieuts., Grade (B) :—F. G. A. Terrill, from (Ad.);
 Jan. 20. A. Jukes, from (S.O.); May 1.

J. W. S. Appleton is granted a temp. commn. as Sec. Lieut., Grade (A);
 Oct. 16, 1918.

Maj. W. R. Wills relinquishes his commn. on revision to I.A.R.O.; July 16.

The following relinquish their commns. on ceasing to be employed :—
 Lieut. G. W. E. Baker (Lieut., R. Berks. R.); June 22. Sec. Lieut. (Hon.
 Lieut.) C. C. Newton-Wade (Capt., K.O.Y.L.I.); July 8. Lieut. C. H.
 Shelton (Lieut., R.H. and R.F.A.); July 31.

(Then follow the names of 52 officers who are transfd. to the Unemployed
 List under various dates.)

Lieut. T. A. Burns relinquishes his commn. on account of ill-health con-
 tracted on active service, and is permitted to retain his rank; July 21.

Sec. Lieut. (Hon. Capt.) U. Brown (Welsh R., T.F.) relinquishes his com-
 mission on account of ill-health, contracted on active service; July 20.

Sec. Lieut. H. P. Bolt is antedated in his appointment as Sec. Lieut., Grade
 (A); Feb. 21.

The surname of Capt. G. E. Lygo is as now described, and not "Liggs,"
 as stated in *Gazette* of April 1.

The notification in *Gazette* of March 25 concerning Lieut.-Col. (actg. Col.)
 S. E. Smith is cancelled.

The notification in *Gazette* of March 11 concerning Sec. Lieut. J. R. Coult-
 hard is cancelled.

The notification in *Gazette* of May 16 concerning Lieut. J. A. Atkinson is
 cancelled.

The notification in *Gazette* of May 16 concerning Capt. L. R. Prichard
 is cancelled.

The notification in *Gazette* of May 30 concerning Lieut. J. A. Atkinson is
 cancelled.

The notification in *Gazette* of June 24 concerning Lieut. G. Glen is can-
 celled.

Medical Branch

E. W. Craig, M.C. (Temp. Capt., actg. Maj., R.A.M.C.), is granted a temp.
 commn. as Capt.; Oct. 1, 1918, and to be actg. Maj., with seniority from
 May 10, 1918 (substituted for notification in *Gazette* of Jan. 1).

(4 officers transfd. to Unemployed List.)

The notification in *Gazette* of April 4 concerning Capt. T. E. Mulvaney is
 cancelled.

Dental Branch

G. F. Charles is granted a commn. as Capt.; July 1 (substituted for noti-
 fication in *Gazette* of July 4).

Memoranda

Lieut. F. T. Court to be Hon. Capt.; Dec. 29, 1918.

Capt. (actg. Maj.) R. S. Lindsell, O.B.E., relinquishes his commn. on ceasing
 to be employed; June 1.

The following Temp. Hon. Lieuts. relinquish their commns. on ceasing
 to be employed :—J. S. Low; March 16. T. H. Thresh; June 16. F. H.
 Wheeler; July 16.

(3 officers transfd. to Unemployed List.)

Sec. Lieut. H. G. Keene to take rank and precedence as if his appointment
 as Sec. Lieut. bore date Jan. 1.

The notifications in *Gazette* May 27 concerning D. Morrison and C. D. Law
 are cancelled.

(Then follow the names of 46 Overseas Cadets granted temp. commns. as
 Sec. Lieuts., and six Cadets granted hon. commns. as Sec. Lieuts.)

London Gazette, July 25.

The following temporary appointment is made :—

Staff Officer, 3rd Class.—Sec. Lieut. G. T. Armitage; May 23, and relin-
 quishes actg. rank of Capt.

The surname of Lieut.-Col. C. E. H. Rathborne is as now described, and
 not "Rathbone" as stated in *Gazette*, July 18.

Flying Branch.

Capt. D. G. Donald to be actg. Major whilst employed as Major (A.);
 May 1.

Lieut. J. A. Rutherford to be Lieut. (A.) from (T.) (Nov. 27, 1918).

The following relinquish their commns. on ceasing to be employed :—
 Lieut. (Hon. Capt.) W. L. Haight (Capt., W. Ont. R.); April 24. Sec.
 Lieut. (Hon. Lieut.) F. J. Mawdesley (Lieut., C. Ont. R.); May 13; Capt.
 (Hon. Major) J. A. Dennistoun (Major, Manitoba R.); June 9 (substituted
 for notification in *Gazette*, June 24); Sec. Lieut. (Hon. Lieut.) A. T. le F.
 Johnson (Lieut., Lord Strathcona's Horse); July 17.

(Then follow the names of 109 officers who are transfd. to the Unemployed
 List under various dates.)

Lieut. J. F. Hunt relinquishes his commn. on account of ill-health, and is
 permitted to retain his rank; July 20.

Lieut. H. S. Round to take rank and precedence as if his appointment
 as Lieut. bore date April 1.

Sec. Lieut. (Hon. Lieut.) J. C. Ambler (Lancs. Fus., T.F.) relinquishes
 his commn. on account of ill-health; July 10.

The rank of Lieut. W. Wilkinson is as now described, and not "Sec. Lieut.,"
 as stated in the *Gazette* of July 22.

The surname of Lieut. E. C. Cockburn is as now described and not "Cock-
 win," as stated in the *Gazette* of March 25.

The notification in the *Gazette* of March 21 concerning Sec. Lieut. C. A.
 Newham is cancelled. The notification in the *Gazette* of April 29 to stand.

The notification in the *Gazette* of April 1 concerning Sec. Lieut. A. J. New-
 ham is cancelled.

The notification in the *Gazette* of April 4 concerning Lieut. J. Milton is
 cancelled.

The notification in the *Gazette* of June 3 concerning Lieut. L. M. McAab
 is cancelled. The notification in the *Gazette* of July 8 to stand.

The notification in the *Gazette* of July 15 concerning Lieut. H. S. Symonds
 is cancelled.

SIDE-WINDS

"MIRALITE" is numbered among those who join in the glory of the historic voyage of the R 34, for the pistons of the Sunbeam engines were made of this alloy. Miralite, Ltd., are naturally proud of the part their pistons played in the achievement, but at the same time it is but the culmination of a series of searching tests to which they have submitted their speciality. "Miralite," it may be pointed out, is an aluminium alloy, which has proved itself eminently suitable for the making of pistons either die-cast or moulded in sand. Its use, however, is not restricted to this particular work. The manufacturers have experimented with it, and have evolved certain modifications which enable them to supply Miralite for a variety of purposes. One of the most interesting developments is the making of piston-rings, and the results so far obtained indicate that they will largely supersede the cast-iron ring. There is not the possibility of scoring the cylinder, which is a risk always present when the latter are used—in fact, in one testing-shop Miralite piston-rings have entirely replaced cast-iron rings on this account.

ANOTHER use for Miralite is in the making of carburettor parts. It is a well-known fact that petrol has an adverse effect upon aluminium, but Messrs. Miralite, Ltd., have produced an alloy which has so far successfully withstood prolonged tests. All these developments are full of promise, and the firm, whose works are at 87-91, High Street, Mortlake, S.W. 14, will be glad to send particulars to any enterprising companies who are on the look-out for new things.

CORRESPONDENCE

THE R 34'S ENGINES

[1976] In reference to the recent successful cross-Atlantic and return journey of H.M.A. R 34, this ship, as you are aware, is fitted with our 270 h.p. "Maori" Type IV engines, and it is thought that the following information regarding the performance of the engines during this trip will be of some assistance to you:—

We will deal with the two reported incidents of the trip first.

The failure of the studs in the connecting-rod big-end on the port engine in the aft car was caused by the engine being allowed to run after the white metal had run out of the big-end bearing. The reasons for the absence of the white metal on this bearing are somewhat obscure, as the crew state that the oil pressure was correct at the time of the breakdown. Previous to the actual breakdown of the engine, the clutch between the engine and the propeller shaft was accidentally thrown out, with the result that the engine was caused to race to a high speed. It is possible that this caused the failure of the white metal, and it would only be a matter of time before the broken metal was hammered out. As the engine up to the time of this mishap had run approximately 300 hours, it can be assumed that the failure was not due to any defect in either material or workmanship.

The chewing-gum episode has been greatly exaggerated. When our representative visited Pulham to meet the ship on her arrival, he expected to have difficulty in finding the engine under heaps of chewing-gum, but to his great surprise he could not locate the repair until he received the assistance of a mechanic in charge of the engine.

It seems that the head had broken off one of the small screws securing the water-plate on the cylinder-jacket, and that this allowed a very small drip of water. To stop it, the mechanic fitted a small plate over the hole, securing the plate under the head of the two adjacent screws. Just before finally tightening these screws, he had a brilliant idea and inserted a small piece of chewing gum.

This, you will agree, is somewhat different to the reports which have been made, referring to the use of chewing-gum to repair a broken-down engine.

It is understood that it was not necessary to stop the engine to effect this repair.

With the exception of these items, no serious trouble was experienced, the engines running quite satisfactorily both on the outward and return journey, during which the five engines between them put up a total of approximately 900 hours' running, to which must be added over 600 hours previous running.

Many non-stop runs were made of anywhere between 20 and 36 hours' duration, without any incident worth mentioning, the engines being closed down at the ends of these periods for a few hours' rest as per pre-arranged programme.

After the breakdown of the port engine in the aft car, the starboard engine was run under full throttle conditions for 29 hours, and was quite satisfactory, this run being terminated by the landing of the ship at Pulham.

FATHER THAMES was on his best behaviour on Sunday last, when the employees, numbering some 120 of Messrs. S. Smith and Sons (Motor Accessories), Ltd., of Great Portland Street, forgot all the worries and troubles of the motor and aircraft industries of the present day and made merry in right good fashion. The party boarded the launch at 10.30 at Richmond for Chertsey, all the arrangements having been very carefully planned at no small trouble by Mr. Dandie and Mr. Seaborne, to whom all expressed their heartiest congratulations and appreciation. The directors of the firm entered whole-heartedly into the fun, much to the gratification of all. The music and songs were excellent; in fact, nothing in any way could have been better.

CALLED to Le Havre recently by French engineers, Barimar, Ltd., the British welding specialists, effectively repaired by metal-fusion the American liner *Saccarappa*, carrying valuable cargo. Their French confrères declared that the "damage was irreparable by ordinary systems," but Barimar reconstructed the windlass in a few hours, thus enabling the vessel to proceed. A French branch of the British company is now being formed to assist in the reconstruction of French derelict machinery by special processes, and similar organisations are also being established in India, Australia, New Zealand, South Africa, British East Africa, Italy, Scotland, Ireland, Belgium and Sweden.

We have been congratulated from high quarters on the performance of both engines and machinery, for which we are solely responsible, but unfortunately we are not allowed to use these congratulations for publicity purposes.

FOR THE SUNBEAM MOTOR CAR CO., LTD.,
J. S. IRVING.

Wolverhampton.

LANDING FEES

[1977] It is a source of gratification to us to see that the Bournemouth Aerodrome is recognised as a suitable arrival and departure centre for commercial and passenger machines, and that a few interested business people have already made use of its ideal situation.

We wish to make public the fact that it is our intention to foster in every way possible the development of the main air routes, and by bringing forward from time to time the new conditions arising from aerial traffic, create a feeling of goodwill and mutual effort throughout this enterprising industry.

The advent of aerial transport opens up a great many points for consideration, such as suitable aerodromes and routes, etc., of which at the moment there are few, also when it is understood that aviation must be fostered upon a business basis, the handling of machines, goods and passengers effectually, becomes an important factor, this must create labour and it requires organisation, this will cost money, and it is upon running cost of the complete services that the future depends. The question arises, will it pay? This can be answered in the affirmative, that is if all points are carefully considered and co-operation maintained.

The present system of aerodrome dues are insufficient, and as this transport system develops it will be necessary to make adequate arrangements for handling and disposal of goods and passengers, and as we have already experienced the amount of work entailed, perhaps we are some of the few best able to realise the necessity of organisation in this direction, and estimate the cost, but before a scale of charges or system of organisation is suggested, the necessity of the opinion and co-operation of all interested business people is essential, at the same time while giving this matter attention, we think that for some considerable time no charges beyond aerodrome dues should be made, and that all aerodromes should operate upon this understanding, and by mutual effort obtain an efficient service.

It will be necessary to go right into this matter. As the systematic co-operation of the various aircraft firms and commercial people is essential, the system obtaining upon one aerodrome should be on exactly the same lines as others, to avoid confusion. Plenty of time, money and brains have been spent upon this one side of the question alone, so now let us have the fruit of this study from all quarters to achieve the result desired.

THE BOURNEMOUTH AVIATION CO., LTD.,
M. Y. BATES, Ground Engineer.

Bournemouth.

COMPANY MATTERS

Vickers, Ltd.

THE directors of Vickers, Ltd., announce the following interim dividends for the half-year ended June 30 last, payable to holders registered on August 5:—2½ per cent. (less income-tax) on the preferred 5 per cent. stock and 5 per cent. preference shares; 2½ per cent. (free of income-tax up to 6s. in £) on the cumulative preference shares; 1s. per share (free of income-tax up to 5s. in £) on the ordinary shares. Dividends will be posted on August 30.

NEW COMPANIES REGISTERED

AERIAL PHOTOS, LTD., 81A, George Street, Edinburgh.—Capital £18,000 in £1 shares. Objects: To carry on the business of (a) aerial photography, including cinematograph films; (b) aerial passenger transit, and (c) commercial aerial advertising, &c. First directors: Capt. R. S. J. B. Andrews, C. H. C. Smith, and O. Hardie.

MORRIS JONES ROPE CO., LTD.—Capital £3,000 in £1 shares. Acquiring business carried on at Brunswick Works, Eldon Street, Sheffield, as the "Morris Jones Rope Co.," manufacturers of and dealers in all kinds of wire ropes, aircraft, &c. First directors: J. W. Jones and E. M. Jones.



A Hangar Invention

THE Royal Commission on Awards to Inventors at a meeting on July 29, heard evidence regarding a claim by Messrs. Delacombe, Marechal, and Hervieu, in respect of sheds for kite balloons and aeroplanes. It was stated that these sheds were used extensively round the Mediterranean and the coasts of England in connection with the anti-submarine campaign.

M. Hervieu said that by his invention the roof was built on the ground, and afterward raised into position.

The royalties paid to June, 1917, were stated to be £13,000, which excess profits and income-tax had reduced to £1,750.

Brig.-Gen. Masterman, R.A.F., said the sheds had proved to be entirely satisfactory, and Capt. Burgess, of the Aircraft Designs Department of the Air Ministry, said that M. Hervieu was at the top of the tree as a designer of aeroplane sheds. It appeared from the evidence that the sum spent on construction, on which royalty was claimed, amounted to nearly one million sterling.

Mr. Trevor Watson, who appeared for the Treasury, while admitting the value of the designs, submitted that a royalty basis was not a proper basis of award.

The Chairman stated that the Commission would consider their award.

No Municipal Aerodrome for Middlesbrough

THEY do not appear to have very enterprising municipal authorities up Middlesbrough way. At any rate, the corporation of that city, having been offered by the Government the first chance of purchasing the Redcar Aerodrome, have decided that they have no use for it.

An Aerodrome at Ilford

APPLICATION has been made to the Ilford Council for the hiring of the Hainault recreation ground for use as a civilian aerodrome for two years.

Disposal of Canteen Profits

THE Government have approved an organisation for the disposal of the canteen profits which have accumulated during the War. The sums are considerable, and will be devoted to the benefit of disabled and discharged officers, N.C.O.s, and men; widows, children, and orphans of deceased officers, N.C.O.s, and men; the provision of social and recreation benefit for ex-officers, N.C.O.s, and men; the benefit of serving officers N.C.O.s and men as regards recreation.

It is hoped that this new organisation will take the form of a United Services Fund for the good of past and present sailors, soldiers, and airmen or their dependents. Gen. Sir Julian Byng, who is leaving the Army for this purpose, has been appointed chairman of the board of management, and the executive committee will include representatives of all ranks of serving and ex-serving officers and men and women.

Sage "Milestones"

A PRINTERS' error crept into the table of dimensions of Sage machines in our issue of last week. In the column giving the stagger the dimensions were given in ft. and ins.; these, of course, should read 11·8 ins., etc., etc.



Aeronautical Specifications Published

Abbreviations:—cyl.=cylinder; I.C.=internal combustion; m.=motors.

Applied for in 1917

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published July 24, 1919

11,389. FULLER ACCUMULATOR Co. and H. C. BROWN. Lamps for aircraft. (128,615.)

11,441. W. HUTCHINGS. Machine for measuring aircraft propellers. (128,619.)

11,540. S. A. FLOWER. Transverse frames of airships. (128,621.)

- 11,614. S. O. COWPER-COLES. Metal wing for flying-machines. (128,622.)
 11,743. L. PAULHAN and H. J. L. M. DE CHEVARDIERE DE LA GRANDVILLE. Aerial propellers. (128,629.)
 11,754. PORTADOWN WEAVING Co. and T. J. GREEVES. Transparent flexible material for aeroplane wings. (128,630.)
 11,874. AUSTIN MOTOR Co. and Sir H. AUSTIN. Mounting of aeroplane propeller and gun firing axially through same. (128,634.)
 11,889. E. R. CALTHROP. Parachute-launching devices for aeroplanes. (128,636.)
 12,059. BRITISH AND COLONIAL AEROPLANE Co. and W. T. REID. Aircraft fuselages. (128,643.)
 12,060 and 12,061. BRITISH AND COLONIAL AEROPLANE Co. and W. T. REID. I.C. engines for aircraft. (128,644 and 128,645.)
 12,113. J. J. MAYROW. Fuselages. (128,651.)
 12,311. H. F. MORDEY, W. LANE and P. H. HOUGHTON. Aircraft propellers. (128,657.)
 12,349. S. E. GROVES and T. W. H. WARD. Dopes or varnishes. (128,659.)
 12,406. E. E. BROWN and D. J. MOONEY. Metal construction for aircraft. (128,663.)
 12,483. E. R. CALTHROP. Parachutes. (128,669.)
 12,534. F. H. BRAMWELL and SUNBEAM MOTOR CAR Co. Observation apertures for aircraft. (128,671.)

Published July 31, 1919

- 12,742. A. H. ACKERMAN and F. G. ERICSON. Landing-chassis. (128,971.)
 12,807. BRITISH AEROPLANE VARNISH Co. and S. E. GROVES. Dopes. (128,974.)
 12,899. AERONAUTICAL INSTRUMENT Co. and G. BREWER. Balloons. (128,979.)
 12,904. VICKERS, LTD. and H. A. SAVAGE. Aircraft gun mountings. (128,980.)
 12,906. G. H. THOMAS, G. DE HAVILLAND and H. R. MORGAN. Poppet valves. (128,981.)
 12,907. G. H. THOMAS, G. DE HAVILLAND and H. R. MORGAN. Determining direction of escape of lubricant from cylinders. (128,982.)
 13,025. G. CAPRONI. Chaser aeroplane. (128,989.)
 13,058. J. D. BRUNTON. Joints in stream-line, etc., wires. (128,990.)
 13,127. A. O. WARREN, W. and E. G. PRIOR. Fuselage, wings, struts, etc. (128,993.)
 13,249. H. W. PHILLIPS. Spars. (128,994.)
 13,254. W. D. ODDY. Propeller-shaping machines. (128,995.)
 13,299 and 13,300. BLACKBURN AEROPLANE and MOTOR Co. and J. W. Copley. Attachment devices for connections in aircraft. (128,997 and 128,998.)
 13,302. BLACKBURN AEROPLANE and MOTOR Co. and J. W. Copley. Aeroplane rudders. (128,999.)

Applied for in 1918

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published July 24, 1919

- 11,063. AERONAUTICAL INSTRUMENT Co. and G. BREWER. Indicating turning movements of aeroplanes, etc. (128,757.)
 11,666. J. J. MAYROW. Wings, aerofolls, etc. (128,770.)
 14,459. T. H. MARTYN. Fuel feed for engines in which cylinders rotate. (119,036.)
 20,897. E. E. BROWN and D. J. MOONEY. Metal construction for aircraft. (128,846.)

APPLIED FOR IN 1919

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published July 31, 1919

- 5,987. D. J. MOONEY and E. E. BROWN. Metal spars, longerons, etc. (129,234.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages liii, liv, lv and lvi)

NOTICE TO ADVERTISERS.

IN order that "FLIGHT" may continue to be published at the usual time, it is now necessary to close for Press earlier. All Advertisement Copy and Blocks must be delivered at the Offices of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, not later than 12 o'clock on Saturday in each week for the following week's issue.

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